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MJSBH

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SHREE BIRENDRA HOSPITAL**
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2

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January-June, 2010/Vol 9/Issue 1



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Medical Journal of Shree Birendra Hospital

January-June, 2010/Vol 9/Issue 1

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Message

General Chhatra Man Singh Gurung

1. I am delighted by the efforts of Shree Birendra Hospital to bring out the Ninth volume of “**The Medical Journal**”.
2. In this era of rapid development and scientific research, I am hopeful that the annual publication of such journal will be helpful particularly, to our dedicated and professionally competent medical personnel to keep abreast of the latest developments in the field of medicine and also use it as a creative forum to share experiences and enrich themselves with the requisite knowledge. I do believe that the growing academic environment in the army hospital will certainly help patients.
3. Medical service of the army has been carrying out a very challenging responsibility of providing a reliable service to the army personnel, ex-servicemen and their families. The commitment shown by the staff of Shree Birendra Hospital is highly inspiring and the medical service that is being rendered has been one of the key motivating factors for our soldiers. I am confident that the hospital will continue its’ effort to install trust, reliability and quality service for its patients as a top priority and provide effective service to all.
4. Finally, I would like to congratulate the editorial board and everyone else involved for a commendable job on The Medical Journal. I give Shree Birendra Hospital my best wishes for any future endeavors.

Chhatra Man Singh Gurung

Chhatra Man Singh Gurung

General

Chief of the Army Staff

Army Headquarters

10 June 2010



Message From The Adjutant General

First and foremost, I would like to extend my best wishes to all the Members of Shree Birendra Hospital on the coming up of its 9th volume of the medical journal. I would also like to express my heartfelt thanks for their unwavering commitment and their diligent service to the Nepal Army and to the Nation. Then, I would like to commend the editorial team involved in the publication of this journal for their effort and an excellent product. By including the works of civilian authors in this journal, the editorial team has certainly augmented the standards of the journal.

The medical team of the Nepal Army has been an invaluable asset to the organization since its inception. Especially, the noble dedication of the medical personnel of the Birendra Hospital needs no further clarification. They have served the Army personnel, ex-servicemen, their dependants, civilians and even the foreign brethren during the peacekeeping missions abroad with utmost diligence and efficacy.

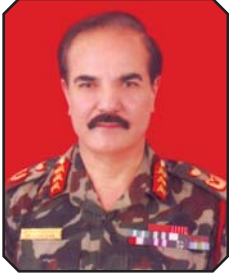
More importantly, the manner in which the medical team has reached out to the public even including those in the remotest areas has only served to bring the Nepal Army closer to the people. The outstanding service rendered to the people during the times of need has greatly helped to cultivate a stronger bond between the NA and Nepali populace.

I am confident that the steadfast commitment and dedication of the medical personnel to serve the organization, the nation and even the international community will only enhance the institutional image of the NA in the days to come.

I wish the medical core all the best.

NA Hq.
Asadh 2067.

Major General Nepal Bhushan Chand
Adjutant General
Nepal Army



Message From The Director General of Medical Services

It is indeed a great pleasure to know that the much awaited Medical Journal of Shree Birendra Hospital Vol. IX issue 1 is being published.

This tertiary level referral hospital has kept abreast with the modern medical practice and provided quality health care services to the military personnel, retirees, their dependents and all others entitled. I am proud to state that this institute is amongst the leading general hospitals of the nation.

The vision of Shree Birendra Hospital to be a Centre of Excellence; transforming into an Autonomous Medical University encompassing a Post Graduate Institute, Medical College for undergraduates, Nursing Campus and a Paramedical Institute; should be realized in the near future.

I am quite confident that this medical journal brought out by the dynamic editorial board; with the cooperation, persistent sincere endeavour of all concerned; will fulfill the aims and ablaze a new path for further progress.

Let the intelligentsia of this institute work together and strongly encourage all medical professionals to take an active role in academic activities, get involved in research and create a habit of writing articles and pledge to publish the forthcoming volumes of MJSBH annually.

I wish it all success.

Maj. Gen. Prof. Dr. Suraj SJB Rana
MBBS, MD, FICS.
Director General of Medical Services
Nepal Army Medical Corps.

Nepal Army Headquarters
Asadh 2067



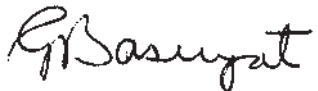
Message From The Commandant

I feel honoured to be able to express my joy at the publication of the 9th volume of the Medical Journal of Shree Birendra Hospital. This would not be possible without the timeless effort of the editorial board whom I wish to congratulate from the bottom of my heart for such high quality work.

I extend my gratitude to all the medical personnel who have contributed to the articles in the book and in so doing have shared their experiences with rest of us. The sincere commitment shown by doctors, nurses and paramedics in caring for military personnel, retirees and dependents and also civilians is remarkable.

Best wishes to all.

Shree Birendra Hospital
Chhauni


Brig. Gen. Geeta Basnyat
Commandant



Editor Speaks

It is my pleasure to bring out the IX-Volume issue 1(One) of the Medical Journal of Shree Birendra Hospital, Chhauni.

Editing for Medical Journals is a time consuming and very responsible task, collecting of original articles, reviews and reports and then peer review and editorial reviews needs thorough knowledge of article publication and commitment.

Publication in Journal helps medical professional to share their experience and hard work with other colleagues and encourages to conduct research work as well. So request all my colleagues to be active in documentation & Publication of the interesting work done so that others also could benefit.

It has been a difficult job to get articles and some of the articles were withdrawn because of the delay in our publication I apologise for the delay. Next time onwards we are determined to publish it timely.

Lastly, I would like to thank my colleagues, printing press and companies who have contributed with advertisements, last but not the least to my editorial team who have worked very hard in making this publication success.

Thank you.

A handwritten signature in black ink that reads 'Bachchu Ram K.C.' with a horizontal line underneath.

Editor in Chief

Brig. Gen. Prof. Dr. Bachchu Ram K.C.

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Managing Difficult Fractures Due To Ballistic Trauma With Ilizarov Ring Fixation

Chand P¹, Shrestha RL², KC BR³, Shah BC⁴, Joshi A⁵, Thapa BB⁶

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Abstract

20 fractures (7 femoral and 13 tibial) were treated with the ilizarov apparatus between 2003 to 2006. All were old injuries, previously managed by internal fixation (intramedullary rods), external fixation (Hoffman's external fixators), or conservatively with traction and plaster of paris slabs. Ilizarov fixators were applied to manage infected non-union with or without bone loss and malunion. Corticotomy and bone transport was carried out in cases with significant bone loss. In others without any limb shortening and minimal bony defect, bone grafting and compression was carried out. In one case valgus deformity along with non-union was corrected. Early weight bearing with range of motion exercises for ankle and knee joints were encouraged. Average fracture healing time was 12 months (8 to 18 months). All fractures healed with <5° of malalignment. Complications included pin site inflammation/ infection, muscle transfixation, knee and ankle joint stiffness and a wire fracture. The ilizarov device provided definitive fixation with acceptable results in all cases.

Key words: Ilizarov ring fixator, distraction osteogenesis, bone transport, infective non-union, corticotomy

Introduction

Extremity injury as a result of blast trauma commonly results in severe soft-tissue and osseous injury. In one recent military review of soldiers injured in battle, 54% of all 3575 wounds involved the extremities and 82% of 915 long-bone fractures were open (1). The tibia and fibula were the most commonly affected lower-extremity long bones.

The treatment of open tibial fractures with aggressive débridement and intramedullary nail insertion followed by soft-tissue coverage has become the standard of care at most civilian trauma centers (2-6). Severe open extremity fractures resulting from blast injuries during wartime and characterized by an "outside-in" mechanism

with extensive contamination and delays in treatment due to evacuation are distinct injuries compared with civilian injuries and may be better treated by avoiding placement of internal fixation. (7-12).

Their treatment, prognosis, and outcome are mainly determined by the mechanism of injury, degree of resulting comminution, soft tissue injury and displacement. Fractures produced by indirect trauma have a better prognosis than those produced by direct trauma. The risk of delayed union and nonunion in closed and open treatment is increased with comminution. Open fractures have a higher infection rate than closed fractures and the rate increases with the increasing

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severity of the soft tissue injury. High-energy injuries have added to the number and complexity of fractures of long bones, especially those of tibia and so have the treatment modalities addressing them. War injuries are peculiar as they incorporate severe soft tissue trauma, with bacterial contamination, along with the possibility of a vascular injury. The fracture itself might be severely comminuted, with or without bone loss. Almost always they are high velocity injuries. Thus the orthopaedic surgeon is often faced with non-united or mal-united fractures, bones and soft tissue defects, persistent infections and sometimes the need for amputation.

Ilizarov method addresses most problems, allowing early weight bearing ambulation and joint mobilisation. Progressive bone histogenesis following corticotomy and bone transport helps in filling bone gaps eradicating infection and promoting fracture union. Infection control is achieved by radical debridement of the infected tissues including bone and followed by bone transport to reconstruct the residual bone defect.

We evaluated the use of Ilizarov device as the mode of fracture stabilization of these difficult fractures and present our experience of Ilizarov fixation in the treatment of established recalcitrant infected non-unions and gap non-unions of the tibia and femur and the suitability of this procedure with particular reference to bony union and to identify the factors influencing the functional outcomes.

Methods

Twenty patients with established infected non-union of the tibia (sixteen) and femur (four) were included for the study. One patient had an unacceptable varus angulation of 14° of the tibia. The patients were followed up over a 5 year period from the day of Ilizarov fixator application.

Clinical history including co-morbidities, social habits including smoking and alcohol consumption, previous treatment offered for the fracture, complications, duration of nonunion, were gathered. Seventeen patients were serving soldiers, while the three female patients were all housewives. All the male patients were active and sole earners of their families with no additional source of income.

The initial diagnosis was Gustilo type II open fracture in 1, Type IIIA in 5, IIIB in 12 and type IIIC in 2 patients. 10 patients had extensive bone loss at the time of initial injury. Initially, after debridement, 8 patients had

internal fixation device [intra-medullary nail in 6 and plate and screw fixation in 2] applied and, 10 had external fixation with Hoffman's uniplanar fixators while two were managed conservatively with plaster immobilization.

All patients had preoperative full-length radiographs of the affected limb for assessment of the level and type of fracture nonunion, plane of deformity, bone quality and presence of sequestrum. They were counseled about the procedure to be performed, and the expected outcome of treatment. Culture swabs from draining sinuses and open wounds were carried out in all patients and appropriate antibiotic therapy was initiated. This was repeated whenever necessary throughout the duration of treatment.

4 patients with internal fixation had had fascio-cutaneous or muscle flap coverage for the open wounds prior to application of ring fixator. One, with a varus deformity underwent correction of the defect while in the Ilizarov frame. For two patients who had femoral artery rupture, vascular reconstruction was carried out with autologous saphenous vein graft when they were first brought in.

The average duration of non-union and time of Ilizarov fixation was 7.8 months. Limb shortening ranged from 2 – 11 cms and bone gap ranged from 2–9 cms. 15 patients had associated fibular shaft fractures, which had healed at the time Ilizarov application. Pus culture in all patients obtained pre operatively, revealed a mixed a bacterial growth.

The Ilizarov frame was constructed pre-operatively in all patients. 15 patients with limb shortening and significant bone loss had debridements combined with ring fixator application as a single stage procedure. Corticotomy was carried out in these patients followed by bone transport. All patients had bifocal osteosynthesis [compression of the fracture site with bone transport following corticotomy]. Five of these were given additional bone graft when docking was achieved. In four patients with no limb shortening and minimal bone loss, after debridement, the fracture site was freshened, and acute docking was carried out after instituting autogenous bone graft along with fibular osteotomy. In one patient the ilizarov frame was applied to rectify valgus deformity along with the non union of the of the tibia. Compression with bone grafting was carried out once deformity was corrected. 11 patients had proximal tibial and 5 patients had distal tibial corticotomies. All femoral osteotomies were performed proximally. Postoperatively all patients

S.No	Age	Sex	Type	Bone	Side	Injury Type (Gustillo)	Initial Fixation	Duration in Ilizarov Fixator (months)	Duration in PTB/ femoral brace(wks)	Time to union (Consolidation) In months	Complications			Treatment method	Result (ASAMI)	
											Pin tract infection	Residual unacceptable deformity	Shortening		Boony	Functional
1	35	M	GS	T	R	III-B	EF	6.5	6	8	+	Nil	Nil	Transport	E	E
2	34	M	GS	T	L	III-B	EF	6.5	6.5	8	+	Nil	1.5cm	Compression	G	G
3	24	M	IED	T	R	III-A	IMN	6.5	6	8	+	Nil	1.5cm	Compression	G	F
4	40	M	GS	F	R	III-B	IMN	9	6	10	+	Nil	Nil	Transport	E	E
5	32	M	Gr.Bl.	T	L	III-B	IMN	11	7	17	+	Nil	Nil	Transport	G	G
6	40	F	Gr.Bl	T	L	III-C	EF	11	7	12.5	+	Nil	2cm	Transport	F	P
7	45	M	GS	F	R	III-B	EF	9.5	8	9.5	+	Nil	1.5cm	Compression	G	F
8	33	M	IED	T	R	III-A	POP	7.5	6	8.5	+	Nil	Nil	Valgus correc.	F	F
9	20	M	GS	T	L	III-B	EF	7	6.5	8.5	+	Nil	1.5cm	Transport	F	G
10	34	M	GS	F	L	III-B	EF	10	8	10	+	Nil	Nil	Transport	G	G
11	28	M	GS	F	R	III-A	IMN	8.5	8	8.5	+	Nil	Nil	Transport	E	E
12	23	M	IED	T	L	II	POP	7.5	6	9	+	Nil	Nil	Transport	E	E
13	19	M	GS	F	L	III-B	EF	8	8	8	+	Nil	1.5cm	Compression	F	G
14	51	M	IED	T	R	III-B	Plate	9.5	6	11	+	Nil	Nil	Transport	F	G
15	50	F	GS	T	R	III-A	Plate	7	6	8.5	+	Nil	Nil	Transport	G	P
16	20	M	GS	T	R	III-B	IMN	10	7	11.5	+	Nil	Nil	Transport	F	F
17	51	M	GS	F	R	III-B	IMN	12	6	12	+	Nil	1cm	Transport	F	P
18	32	M	Gr.Bl	T	L	III-C	EF	14	6	15.5	+	Nil	1.5cm	Transport	F	P
19	25	F	GS	T	L	III-B	EF	15	6	16.5	+	Nil	2.5cm	Transport	F	P
20	30	M	GS	T	R	III-A	EF	9	6	11	+	Nil	1cm	Transport	G	F

had radiographs of the affected limb taken for assessment of the corticotomy and position of the wires. Corticotomy site distraction was initiated after 10 days at the rate of 1 mm per day. Compression and distraction technique [Accordian manoeuvre] was employed in 2 patients. Follow up x-rays were done at 3 weeks for assessment of the regenerate and at 4 weeks interval thereafter until fracture union. In doubtful distraction rate was reduced to 0.5 mm/day until satisfactory appearance on x-rays.

Patients were mobilized with partial weight bearing, within comfort by a trained physiotherapist. They were discharged upon satisfactory compliance and followed up in the out patient department at monthly intervals for assessment of fracture union, regenerate progress and ensuring compliance with physiotherapy. Fixator was retained further for the duration equal to the period of bone transport after bone docking in cases where bone transport was done. The fixator was removed once union was confirmed with conventional x-rays. The operated limb was protected in a functional cast brace for at-least 6 to 8 weeks after removal of fixator.

The period of follow up after fracture union ranged from 8-20 months [Average 13 months]. The outcomes were assessed using the Association for the Study and Application of Methodology of Ilizarov [ASAMI] criteria.

Results

The patients were followed-up for an average period of 13 months (8 to 20) after removal of the frame. The results were divided into bone and functional results, according to the criteria laid down by the Association for the Study and Application of the Method of Ilizarov (13, 14). This classification is applicable for tibial and femoral non-unions.

Bone results were determined according to four criteria: union, infection, deformity and limb-length discrepancy. A fracture was considered to be united when there was no motion at the fracture site following removal of the Ilizarov frame and when there was radiological evidence of union. Nine patients received bone grafts. The fracture united in all patients and there were no refractures following removal of the frame. The time to union ranged from eight months to eighteen months (average 12 months). One patient with an angular deformity of 14 degrees of the tibia

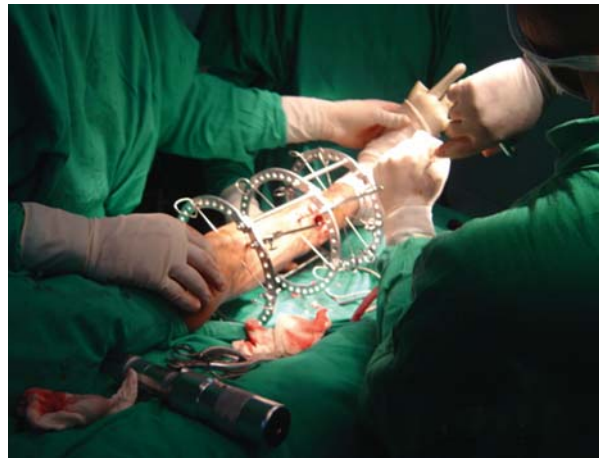
underwent correction. There was some resultant limb length inequality in ten patients, as listed in the table. None required any procedure to correct the shortening. Superficial pin-tract infections developed in all patients; these resolved with local care and oral antibiotics. In one patient, a broken half-pin was removed and in two patients a single wire was repositioned. All fractures healed with < 5° of malalignment.

According to the protocol of the Association for the Study and Application of the Method of Ilizarov (ASAMI), a bone result cannot be graded excellent unless union was achieved without the use of a bone graft. An excellent result was defined as union, no infection, deformity of less than 7° and a limb-length discrepancy of less than 2.5cm. A good result was defined as union and any two of the other three criteria; a fair result, as union and one of the other criteria; and a poor result, as non-union or refracture, or as union but none of the remaining three criteria. The authors used the above classification to evaluate the results of the tibial and femoral non-unions. According to the system, the bone results were excellent in 4 patient, good in 7 patients, and fair in 9 patients.

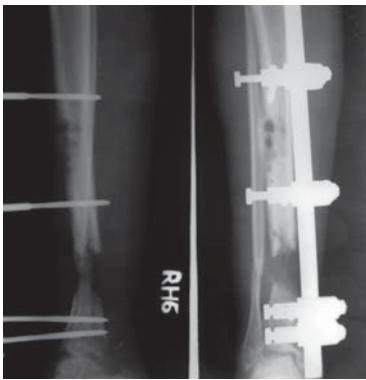
The functional results were based on five criteria (ASAMI); a significant limp, stiffness of either the knee or the ankle (loss of more than 15° of full extension of the knee or 15° of dorsiflexion of the ankle in comparison with the normal contralateral ankle), soft tissue sympathetic dystrophy, pain that reduced activity or disturbed sleep and inactivity (unemployment or an inability to return to daily activities because of the injury). The functional results were considered excellent if the patient was active and none of the other four criteria were applicable; good, if the patient was active but one or two of the other criteria were applicable; fair, if the patient was active but three or four of the other criteria were applicable, and poor, if the patient was inactive regardless of whether other criteria were applicable. Four patients were able to return to work and daily activities. Six were active but had a limp with some pain and stiffness of the ankle and knee joints. Another six, in spite of being active had persistent limb oedema and some degree of pain besides stiffness of the ankle and knee. Five patients had to quit their jobs as they were unable to pursue an active lifestyle. According to these criteria, the functional result was excellent in 4 patients, good in 6 patients, fair in 5 patients and poor in 5 patients.



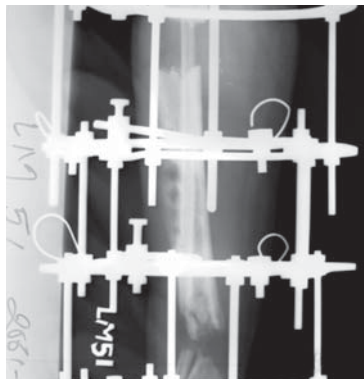
Type III B fracture of Tibia



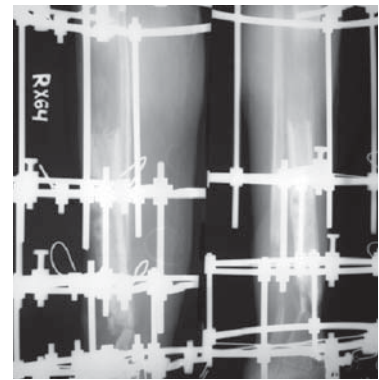
Ilizarov ring fixation



Type IIIb open fracture initially managed with Hoffman fixator Case-I



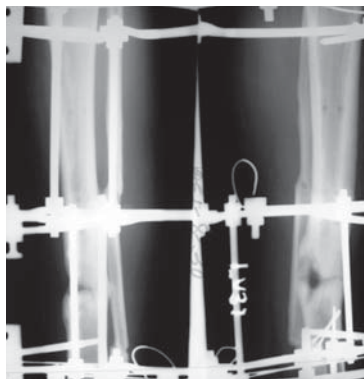
Ilizarov ring fixator applied with corticotomy and bone transport Case-I



Adequate length achieved, and docking done Case-I



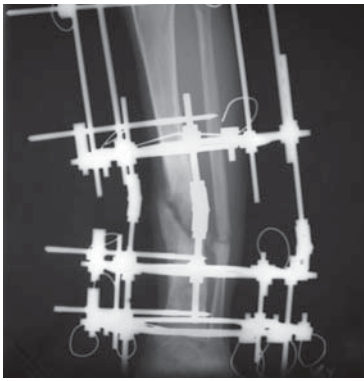
Infected non-union of left tibia



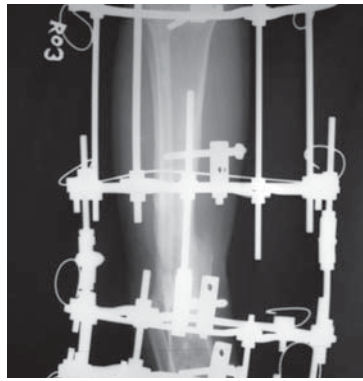
Compression with Ilizarov fixator



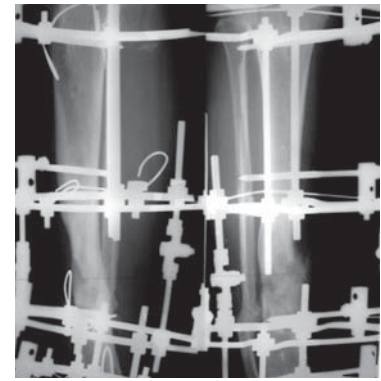
Bony union with functional brace



Non union with varus deformity
Case III



Angulation almost corrected
Case III



Union achieved

Discussion

Numerous authors have concluded that intramedullary nail fixation of type-III tibial fractures is the preferred method of stabilization for patients at a civilian trauma center(2-6). Kakar and Tornetta(15) recently reported the results of 143 open tibial fractures treated with protocol-driven wound management and immediate unreamed intramedullary nail fixation, which resulted in minimal complications and a low rate (3%) of deep infection.

Similarly, monoplanar external fixation has been considered for use in tibial fractures characterized by severe soft-tissue injury because of its ease of placement and the preservation of existing blood supplies to the tibia. However, Henley et al. (16) have found that use of monoplanar external fixation often leads to higher rates of complications, including malunion, infection, and an increased number of operative interventions, and this type of fixation is generally reserved for temporary stabilization.

Compared with injuries sustained in the civilian trauma setting, wounds sustained on the battlefield resulting from an "outside-in" injury mechanism are considered to be more contaminated.(17-19). Moreover, the typical early débridement and coverage protocols espoused by Fischer et al. (20), which lead to a lower rate of infectious complications, are not always possible because of delays associated with evacuation to definitive treatment facilities during wartime. These realities combined with the common occurrence of extensive retained blast fragments throughout the soft tissues in themselves complicate the injury management.. Similar to many other institutions, we have observed the benefits of a protocol-driven approach

to the treatment of these limb-threatening injuries, which includes frequent aggressive soft-tissue and osseous débridement, expeditious soft-tissue coverage, and delayed supplemental bone-grafting when needed.(2-6).

A fracture non-union is a significant problem to the patient and the surgeon. In most instances the patient has undergone one or more surgical procedures, has lost considerable time from his/her job or life style, and has been forced to alter his or her life style. Furthermore, the psychological and physical trauma to the patient when faced with the prospect of another surgery is often underestimated. The problems facing the surgeon are no less formidable. In many instances consolidation of the non-union must be achieved with correction of axial and rotational mal-alignment (21). In our study, all patients with open fractures were being treated with other forms of definitive treatment before being opted for ring fixation. The effects of smoking on the outcome of ring fixation have been well documented (22). Many of the patients in our study were smokers and consumed alcohol. Despite being advised about the consequences of smoking and alcohol intake, it was difficult to ensure complete co-operation from the patients in this regard. The regenerate appearance was not on expected lines in some cases particularly with the distal corticotomies. In one particular case, there was no regenerate visible on the radiographs even at 4 weeks and an accordion man oeuvre was resorted to and distraction rate was reduced until satisfactory regenerate was visible.

We have followed the criteria laid down by ASAMI. The functional result is predetermined by the condition of the nerves, muscles, vessels, joints, and to a lesser

extent the bone (23). Ankle pain with disability is the major source of residual disability after successful use of the Ilizarov device for the treatment of Tibial nonunion even after fracture union (24). No patient in our study had any residual neurovascular deficits but the correlation between bony and functional results was poor. This is largely due to the soft tissue status particularly oedema and joint stiffness. In our study, all patients had varying degrees of knee, ankle and subtalar joint stiffness. Though knee stiffness was largely overcome with physiotherapy, foot and ankle stiffness persisted and worsened despite bony union. This may account for the poor functional outcome in our cohort of patients.

ASAMI criteria define unemployment as a poor result. Majority of patients who were assessed for functional results did not go back to their original employment. Most changed their jobs to a sedentary and less demanding work as they did not have any choice. Other studies (25,26), have highlighted that patient satisfaction is more important than employment status in assessment of functional status. This is true in developed countries, where there is adequate government support for economic inactivity. In developing countries like Nepal no such support exists. Therefore the direct applicability of the ASAMI criteria in the Indian scenario may not be appropriate for a finite functional analysis. Though many from our study were happy in that an amputation was avoided, most of them felt that this was at a 'heavy price' and some still preferred an amputation in the hope of early return to work and pain relief.

Conclusion

Our observations indicate that the Ilizarov method is not a panacea but an important treatment method for surgeons, in situations such as osteomyelitis, osteopenia, complex deformities and significant limb-length inequalities. The drawbacks of this method are the time and resource, intensive nature of the treatment, the difficulties of prolonged fixator use and the potential major and minor complications. The surgeon should know when to offer an amputation as this is, in certain circumstances, the best option. Therefore the treatment in these situations needs to be highly individualised.

In conclusion, we believe that Ilizarov ring fixation that has resulted in a relatively low rate of complications and definite fracture union for severe open fractures of the long bones of the lower extremity resulting from war injuries. Ring external fixation in these patients appears to be a valuable form of treatment allowing the added

benefit of immediate weight-bearing without hardware retention after fracture-healing.

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Evaluation of Immunochromatographic Rapid Diagnostic Test versus Peripheral Blood Smear for Diagnosis of Malaria in Nepal

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Abstract

Malaria is one of the most important parasitic diseases of humans. It is the major vector disease with occasional focal outbreaks in Nepal. Annually more than 60,000 clinical cases of malaria occur out of that about 10,000 cases are confirmed cases of which about 1200 happen to be *plasmodium falciparum* cases. Several factors predispose to transmission of deadly / resistant strains to local population which in turn leads to cerebral malaria having both high mortality and morbidity. As it is well known that peripheral blood smear remains the "gold-standard" in diagnostic measure apart from compatible history but circumstances and situations like in periphery of developing country like ours we can not overlook the advantage of Rapid Diagnostic Tests (RDTs) like OptiMAL test which detects parasitic lactate dehydrogenase in a drop of patient's blood. This study showed that the malaria detected by OptiMAL have sensitivity 96% and specificity of 100% amongst 50 cases of malaria, the OptiMAL is able to detect 48 positive cases. Despite the cost of the test, it's sensitivity and specificity are two remarkable factors in diagnosing the disease rapidly even in case of slide/smear negative ones. The utility of RDTs are not enough studied in our part of world especially in our country where even sufficient trained manpower is always a rarity. The importance of this test emphasize the easy-to-use tool for early diagnosis and prompt institution of appropriate therapy to reduce both mortality, morbidity and in return reducing hospital stay and increasing working hour of productive manpower.

Malaria a protozoan disease transmitted by the bite of infected anopheles mosquitoes is one of the most important parasitic diseases of humans, with transmission in 103 countries affecting ≥ 1 billion people causing between 1 and 3 million deaths each year. Malaria has now been eliminated from North America, Europe, and Russia but despite enormous control efforts, has resurged in many parts of tropics. However increasing problem of drug resistance of the parasite and insecticide resistance of the vectors in endemic areas are major concern. Malaria even today, as it has been for centuries, remains a heavy burden on tropical communities, a threat to non-endemic countries, and a danger to travelers.¹ In Nepal. Every

year more than 60,000 clinical cases of malaria occurs as occasional focal outbreaks out of that about 10,000 cases are confirmed cases of which about 1200 happen to be *plasmodium falciparum* (pf) cases. In 1990s many focal outbreak have occurred which led to some death as well. The rising incidence of malaria and the increasing resistance to treatment with conventional antimalarial drugs and the susceptibility of vectors to the available insecticides is posing challenge to and has added burden to the public health experts and scientists engaged in malaria control programme. Thus Global Malaria Control Strategy, RBMI, And National Malaria and Kala-azar control programs have set the following objective for malaria control:

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- Prevention of mortality due to anaemia
- Progressive reduction of malaria morbidity, endemicity, and transmission to a level that will not hinder socioeconomic development of the country
- Prevention and control of malaria epidemics
- Containment of *P.falciparum* epidemics
- Sustained capacity building and support control activities through operational research
- Public / private / community partnership for improved malaria control.

Following lab tests are available to confirm malaria as per need.

- Giemsa stained PBS-Thick and Thin smear: "Gold standard"
- Acridine Orange stained PBS –[Good {has some limitations}]
- Quantitative Buffy Coat Assay - [Excellent {has only few limitations}]
- Rapid Diagnostic Tests: pfHRP-II and pLDH
- PCR (Polymerase Chain Reaction)

While addressing malaria in Nepal one should not forget the points including population distribution & epidemiological changes [Terai region, Open - border with India] and security troops [contribution of troops from Nepalese Army, Police and Armed -forces in peace keeping mission in endemic parts of African continent] endemic area visit.

Along with several other factors those aforementioned factors are again predisposing to the transmission of deadly / resistant strains to local population which in turn leads to cerebral malaria having both high mortality and morbidity. RDTs use should be evaluated for early diagnosis and prompt institution of therapy is an important determinant of outcome especially in case of severe falciparum malaria. Important factors to be considered while opting RDT'S are; (i) commercial availability (ii) Plasmodium species to be detected (p.falciparum / pan-specific), (iii) cost (including transport, training, and quality control), (iv) sensitivity, (v). shelf-life and temperature stability in intended conditions of storage and use, (vi) ease of use including format of the test (e.g. cassette, dipstick,

car) and (vii) requirement for post -treatment testing of patient.

This study was carried out with pLDH based Rapid Diagnostic Tests (RDTs) to be evaluated in diagnosis of malaria, probable / suspected malaria cases visiting Shree Birendra Hospital. As it is well known that peripheral blood smear remains the" gold- standard" in diagnostic measure apart from compatible history but circumstances and situations like in periphery of developing country like ours we can not overlook the advantage of Rapid Diagnostic Tests (RDTs) like Opti MAL test. Despite the cost its sensitivity and specificity are two remarkable factors in diagnosing the disease rapidly even in case of situations like slide/smear negative ones. Even the sporadic endemic have great toll in the health cost of developing countries like ours. Presentation of disease is usually similar to Enteric - fever or even hepatitis which not only imparts diagnostic-dilemma but also delays in institution of therapy timely to eradicate the parasite from blood. This results increase in number of hospital stay and thereby delaying their recovery and ultimately reducing the working hours. As implication of rapid tests/ RDTs are not enough studied in our part of world especially in our country where sufficient trained manpower in technical field is always a rarity! At times availability of microscopy and electricity may not only be impossible but also time consuming and cumbersome procedure in endemic situations. We need to develop skill and keep us standby with the easy alternative method to tackle such cases in emergency and unconventional situations without hurdles and promptly.

Subject and Methodology

This was a Hospital based descriptive case study carried out at Medical and Pathology department of Shree Birendra Hospital, Chhauni, Ktm, involving the sample Size 50- case of high- grade fever with history of travel to endemic area and with or without malaria prophylaxis. As this hospital covers patients/army personnel from various parts of Nepal including Terai region where the prevalence of malaria is high. Further, the Nepalese Army personnel also travel overseas to serve in the United Nations missions including that in Africa and malaria is severe there as well. This study also involved any patients / army personnel serving in malaria endemic zone inside Nepal and person with travel history to malaria endemic zone in Africa as part of service to UN peacekeeping missions. Patients with history of high-grade fever clinically diagnosed as a case of malaria were included after taking informed

consent. Thorough evaluation was done including obtaining a detailed history, physical examination and laboratory investigations (as in Performa) of all enrolled patients. Demographic variables included age, sex, marital status and occupation of the patients. History of travel to endemic area, presence or absence of malaria prophylaxis, presence or absence of jaundice, past history of blood transfusion, past malaria and treatment history was taken with emphasize to radical curative use in indicated cases. A detailed clinical examination was done with emphasis on temperature pattern its relation with pulse, BP, respiration, pallor / icterus (jaundice), abdominal examination for any tenderness and presence of hepatomegaly/ splenomegaly. Anthropometric measurements including height, weights were taken and BMI was calculated.

All the samples were collected by the residents/ technicians in sterile vials containing EDTA as anticoagulant and processed immediately in parasitology laboratory, Department of Microbiology/ Pathology, Birendra Army Hospital. Routine and specific laboratory tests were carried out within 1 to 2 hrs of collection of sample using standard laboratory protocol. Few drop of blood was taken out from the finger pulp after wiping it with spirit swab by using sterile disposable surgical blade and samples were kept in two separate vials and two glass slides. Thin blood film was prepared for species identification.

- * CBC comprising TC, DC, Hemoglobin, Haematocrit, Platelets, and ESR was done.
- * Few drops of blood (2-3drops) were kept in two separate glass-slide for carrying out the microscopic examination of blood smears for about 3minute each[(a) Thin smear &(b) Thick smear].

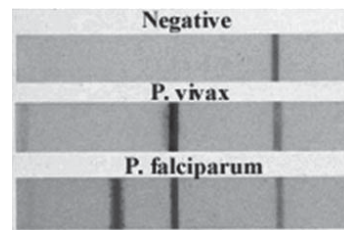
Immunochromatological test using OptiMAL assay –kit.

OptiMAL test is designed to detect infections with both *P falciparum*/ *P vivax*. Manufacturer’s instructions were followed strictly in both tests. Only a single drop (about 30ul) of the fresh whole blood was used for this test. Methodology was as follows:

1. One drop of the buffer solution was added to the conjugated well and similarly four drops use was added to the second test well.
2. One drop (about 10ul) of blood obtained by finger prick was added to the conjugate well with the help of capillary tube provided in the kit and mixed gently.

3. The dipstick was then placed in conjugate well with its wick at the top for 10 minute.
4. After 10 min, the test strip was transferred to the second well which contained the clearing buffer and kept for about 5 min.
5. Then, the dipstick was removed from the well and the interpretation was made after observing the result.
6. In the OptiMAL assay, the reaction is visualized in the form of pink bands across the strip. There are 3 reaction zones in the OptiMAL dipstick.
 - A mono-specific antibody that recognizes only *P falciparum* is coated in the bottom reaction line.
 - A second pan specific antibody is immediately above this zone. This monoclonal antibody that recognizes the pLDH informs of *P vivax*.
 - A third reaction zone is coated at the top of the dipstick where there is an antibody that captures the excess colloid conjugate and serves as a positive control for assay.

The reaction bands are seen as pink-mauve line in the test strip. The interpretation of the assay test strip results is as follows:



- Negative** (one control band at the top)
- Positive** for *P vivax* (one control band plus one test band)
- Positive** for *P falciparum* (one control band plus two test band).

Observations & Results

All the specimens were examined within 2-6 hours of collections. Giemsa stained slides were reported negative only after examination of 200-300 fields systematically. Positive blood films were recorded as Parasites (Rings/ Trophozoites / Schizonts) per 100 white blood cells. [Microscopic demonstration of any morphological stages of malaria parasite was considered as the sole criteria (Gold standard) for laboratory

diagnosis of malaria.]All the samples were examined by using both techniques for the laboratory diagnosis of malaria using standard protocols. Results were noted as M. P.- Positive(+)/Stage. Species- Rings/ Schizont / Trophozoite / Gamete of P.vivax / falciparum. Out of 50 patients 48 were positive for optimal test while 2 were negative and out of that 12 were p. falciparum and 36 were p.vivax and 1 each negative for both species.

Discussion

The discovery of malaria parasites by Laveran in 1880 added milestone in the history of malaria. Malaria is traditionally been diagnosed by examining Giemsa stained blood films, which is considered as the 'gold-standard' method around the world and also in Nepal. In our study we carried out both PBS and RDTs for their comparison. This study showed that the malaria detected by OptiMAL have sensitivity 96% and specificity of 100% amongst 50 cases of malaria the OptiMAL is able to detect 48 positive cases. The 2 blood samples (the positive) were not detected by the OptiMAL test as positive as these patients had taken anti-malarial chemotherapy which might have already killed the parasites and only dead parasites might have been appeared in the slides. The reason would be that OptiMAL assay had not detected them as it is well known that OptiMAL assay captures the pLDH antigen which was secreted only by live organisms. The sensitivity of the OptiMAL for detection of P vivax was 97.3% and for detection of P falciparum was 92.3%. The blood film could only detect and indicated that 70%(35 of 50) of the patients of which 77.14%(27 of 35) were positive for P vivax and 22.9%(8 of 35) were positive for P falciparum. Our data was very much compatible with the results from Honduras i.e. sensitivity of 94 % and specificity of 100 % for Opti MAL assay^{2,3}. Another study conducted in University of Munich, Germany in 1998, similar results were obtained for Opti MAL assay, with a sensitivity of 88.7% & a specificity of 91.9%. Similar study was carried out by Prakash Ghimire (2004) in three holoendemic districts in Far western regional VDCs of Kanchanpur, southern Nepal (Jhalari, Rampur-Bisalpur & Krishnapur). The result obtained was sensitivity of 85% and specificity 100%, PPV 100% & NPV of 89.28%⁴. In another study carried out by Sherchand JB (2001) in the endemic districts of Nepal the result obtained was having the sensitivity of 97% and specificity of 98% for OptiMAL assay⁵. Grobusch MP, et al carried out a study with interesting result that detection of False-positive rapid tests was high for malaria in patients with presence of rheumatoid factor⁶. It is also true that PCR test for malaria has high yield in cases where mixed infection is

suspected because RDTs cannot differentiate species in case of mixed infection. Snounou G., et al. studied Identification of the four human malaria parasite species in field samples by the polymerase chain reaction and detection of a high prevalence of mixed infections⁷.

In conclusion, RDTs have introduced a new dimension to the diagnosis and treatment of malaria. They now permit, among other things, on-the-spot confirmatory diagnosis of malaria at the periphery of the health care system, by health workers with minimal training. The OptiMAL test has thus special significance in a country like Nepal where most of rural centers are unable to diagnose malaria due to the lack of microscopes even slides for microscopy, stains and trained technicians. Malaria endemic zones in Nepal are usually in rural villages, which are at far distance from the Highways. Due to the poor economic condition, distant health centers, lack of transportation facility, patients cannot go to the health centers for treatment thus increasing mortality. In these group of patients follow up is also very difficult. Therefore prompt diagnosis and treatment is a must for the rural malaria patients. It can be accomplished by the use of OptiMAL test. The test is extremely simple and rapid to perform, making it easy to teach the technique/methodology to inexperienced or even untrained persons. Besides the financial savings from unnecessary treatments, the use of OptiMAL test is of value in the early investigations and management of malarial endemics. The rational use of RDTs as a complement to microscopy might give substantial health benefits through earlier treatment and a consequent reduction in morbidity and mortality, by targeting expensive drugs and drug combinations to high risk populations in multidrug resistant areas and through a more rational use of drugs that might effectively reduce drug pressure and possibly delay the progress of drug resistance. The OptiMAL test is of great value in diagnosis of severe and complicated falciparum malaria when microscopy testing might delay institution of treatment promptly. In addition, presence of pLDH in blood indicates presence of viable malaria parasites; the test can be used to evaluate the effectiveness of anti-malarial chemotherapy. It is thus a simple way to monitor response to the drug therapy and in the detection of drug resistance Malarial strains because pLDH reflects the presence of viable Malaria parasites in the blood. pLDH levels follow closely parasitism. Nevertheless, RDTs are unlikely to be widely adopted until their detection capacities have been improved, their potential benefits have been confirmed, and their cost has come closer to what most national malaria programme can afford.

To address these issues, and ensure the optimal use of RDTs as a key tool in malaria control, it requires a co-ordinated effort among users, control programmes, manufacturers and international agencies.

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Pattern of Dermatological Diseases in the Patients of Army Hospital, Kathmandu

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Abstract

Introduction: Human Skin is the largest organ of the body and may mirror the presence of benign/malignant systemic diseases in different ways¹. The pattern of Skin diseases vary in different parts of Nepal due to differences in socioeconomic and geographic factors. This retrospective study, pattern of skin disease in Army Hospital likely reflects the pattern of disease in the Kathmandu Valley.

Aim: To study, assess and compare the different patterns of skin disease in the patients attending the outpatient department in the year 2007 and 2008 in the Army Hospital.

Methods: This was a retrospective study and all the new cases which were diagnosed in the Department of Dermatology in the years 2007 and 2008 were included. The diseases were classified as Papulosquamous, Vesicobullous, Connectivetissue disorders, Skin and Soft tissue tumours, Infective, Eczema, Sexually Transmitted Disease (STI), Leprosy and those skin diseases which were not coming under this format were classified as others.

Result: The total number of cases recorded in the Department of Dermatology were 16828 in the year 2007 and 18643 in 2008. It was found that the infective group of disorders were the largest group of disease, in the year 2007 a total of 6135(36.4%) and in 2008 a total of 7883(42.2%) had suffered from this group of disorders. And the incidence of infective disorder was also statistically significant when both the years were compared p-Value:0.00, OR:1.16, CI:1.11-1.21. Similarly other large groups were Eczema, papulosquamous and sexually transmitted disease.

Conclusion: It was found that the disease pattern in this study was lead by infective disease followed by eczema, papulosquamous disease and sexually transmitted disease.

Key words: Eczema, Papulosquamous, Vesicobullous

Introduction

Human Skin is the largest organ of the body and may mirror the presence of benign/malignant systemic diseases in different ways¹. The pattern of Skin diseases vary in different parts of Nepal due to differences in socioeconomic and geographic factors. The army hospital in Kathmandu not only treats regular personnels but also their family and ex- servicemen who comprise almost 60% of the population who get their treatment. This retrospective study, pattern of skin disease in Army

Hospital, likely reflects the pattern of disease in the Kathmandu Valley.

Aim

To study, assess and compare the different patterns of skin disease in the patients attending the outpatient department in the year 2007 and 2008 in the Army Hospital.

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Methods

This was a retrospective study and all the new cases which were diagnosed in the Department of Dermatology in the years 2007 and 2008 were included. In this study males and females of all age group were included. The diseases were classified as Papulosquamous, Vesicobullous, Connectivetissue disorders (CTD), Skin and Soft tissue tumours, Infective, Eczema, Pigmentary Disorders, Sexually Transmitted Disease (STI), Leprosy and those skin diseases which were not coming under this format were classified as others. Data was tabulated and interpreted in terms of percentage in the computer using SPSS version 10.0. To test the significance of association Chi square test was applied.

Results

The total number of cases recorded in the Department of Dermatology were 16828 in the year 2007 and 18643 in 2008. The number and percentages of the skin diseases are given in Table 1.

In the papulosquamous group the incidence of psoriasis was highest in both the years, 1544(44.8%) in 2007 and 1437 (38.0%) in 2008. A total of 437(2.5%) in the year 2007 as compared to 336(1.8%) in 2008 suffered from vesicobullous condition and it was statistically significant p-Value 0.00, Odds Ratio(OR):0.69, Confidence Interval (CI):0.60-0.80. Pemphigus vulgaris was the most common condition in both the years.

The incidence of Systemic Lupus Erythematosus was highest in both the years in the connective tissue

group. But when both the years were compared the incidence of CTD was statistically significant (p-Value:0.003, OR:0.71, CI:0.57-0.90). Most of the skin and soft tissue tumours were benign in nature. Among infective disorders, dermatophytosis 3463 (56.4%) occurred in maximum number of patients. And the incidence of infective disorder was also statistically significant when both the years were compared p-Value:0.00, OR:1.16, CI:1.11-1.21. The incidence of Seborrhic Dermatitis 780(19.4%) and 810(19.5%) followed by Airbourne contact dermatitis 631(15.7%) and 745(17.9%) in the year 2007 and 2008 respectively was noted. The eczematous conditions were also statistically significant in both the years (p-Value:0.005, OR:0.93, CI:0.89-0.98). The incidence of vitiligo and melasma was highest in the pigmentary disorder group. The incidence of pigmentary disorder was statistically significant when both the years were compared p-Value:0.00, OR:0.75, CI:0.69-0.81. Gonococcal urethritis was most common STI in both the years. And incidence of STIs were significant when compared between the incidence of 2007 as compared to 2008 (p- Value:0.00, OR: 0.75, CI:0.69-0.81).The incidence of leprosy was comparable in both the years. In the other disease category various conditions were included and the main disease were Neurofibromatosis 6, Tuberous sclerosis 2, various types of naevi 60, Portwine stain16, Alopecia Areata 57, different types of Photodermatoses 469, drug reactions 120 in both the years.

Table 1: Number and percentages of the skin diseases

Dermatoses	2007		2008	
	Total(N):16828		Total(N):18643	
Papulosquamous	3446	20.4 %	3779	20.2 %
Vesicobullous,	437	2.5 %	336	1.8 %
Connective tissue disorders	168	0.9 %	133	0.7 %
Skin and Soft tissue tumours	39	0.2 %	35	0.1 %
Infective	6135	36.4 %	7883	42.2 %
Eczema	4008	23.8 %	4147	22.4 %
Pigmentary Disorders	376	2.2 %	299	1.2 %
Sexually Transmitted Disease	1467	8.7 %	1214	6.5 %
Leprosy	24	0.1 %	17	0.09 %
Others	728	4.3 %	800	4.2 %

Discussion

In this study various pattern of dermatological disease were studied in the outpatient department of the army hospital in Kathmandu. Various socioeconomic and geographical conditions are responsible for different pattern of disease. Moisture, temperature, hygiene, food habits, medications, sexual exposure, lower immunity are some of the causes of various disease.

In our study infective conditions were very high. The highest being dermatophyte infections. Low socio-economic conditions, high humidity and working condition are factors which influence the increase in incidence¹. Similar results have been recorded in a study conducted in Delhi². The condition increased from 36.4% in 2007 to 42.2% in 2008 which was a significant increase (p-Value 0.00). The other group of diseases were various types of eczema and papulosquamous disease. Eczema was the second largest group of skin diseases. Airborne contact dermatitis was very common in this part of our country. Most of the people of Nepal are cultivators and are engaged in fields. As such they come in contact with different sensitizers and detergents¹. In a general practice in Belfast, 8% of patients seen during an 8-week period had a dermatological condition. Dermatitis or eczema accounted for 25% of these, of which 63% were considered to be exogenous in origin³.

The other large group was that of Sexually Transmitted infections. Gonococcal urethritis was the condition which was suffered by maximum patients attending the clinic. The higher incidence of STI can be attributed to lack of knowledge about barrier contraceptives. There was significant statistical difference in the incidence of STIs in the year 2007 and 2008, p-Value:0.00. Similarly there was also significant difference in vesicobullous and pigmentary disorders in 2007 and 2008. Pemphigus vulgaris was the most common vesicobullous disorder among patients attending our out patient department. Pemphigus vulgaris accounts for approximately 70% of all cases of pemphigus and may be the most common autoimmune blistering disease in eastern countries, such as India, Malaysia, China and the Middle East^{4,5}. The incidence of leprosy was comparable in both the years. Most of the skin and soft tissue tumours were benign in our study. The incidence of photodermatoses especially polymorphic light eruption (PLE) was also found to be high. PLE is most common in temperate regions, affecting up to 20% of subjects in such areas^{6,7}.

Conclusion

Infective skin disorders, Eczema, Papulosquamous disorders and STIs were most common pattern of dermatological condition found in this hospital. The pattern found in our study was in general similar to that found in various other studies in this subcontinent.

Acknowledgment

It gives me great pleasure to express my deep sense of gratitude to my highly respectable teachers Prof Sudha Agrawal and Dr Tapan Kumar Dhali for their excellent and able guidance in performing this study. Similarly I am grateful to the staff of Department of Dermatology and STI and staff of the record section of Shree Birendra Hospital for their cooperation.

Conflict of interest: None

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Id Reaction : An Overlooked Reaction of a Common Problem

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Abstract

A 15 year old boy presented with sudden onset of pompholyx like eruption on acral areas involving bilateral hands and feet for 2 weeks. Clinical examination showed multiple vesicubullous eruptions on dorsum of bilateral foot, dorsum of hands. There was a focus of intertriginous dermatitis involving right lateral toe cleft with maceration and fissuring. A scraping from the lesion demonstrated fungal hyphae with 10% KOH preparation but not from the vesicular eruption. A diagnosis of Id reaction due to Tinea Pedis was made. Patient was started on topical and oral antifungal along with antihistamines and he responded well with the treatment.

Key words: Id reaction, T.Pedis (Tinea pedis)

Case history

A 15 year old boy presented with sudden onset of pompholyx like eruption on acral areas involving bilateral hands and feet for 2 weeks. There was absence of any similar episodes in the past. None of family members were affected with similar symptoms. Clinical examination showed multiple vesicobullous eruptions on dorsum of bilateral foot, dorsum of hands. There was a focus of intertriginous dermatitis involving right lateral toe cleft with maceration and fissuring. There was no lesion elsewhere in the skin, scalp and mucous membranes. A scraping from the lesion was taken and also from the vesicular eruption and 10% KOH preparation was made. The lesion from right toe cleft demonstrated fungal hyphae but not from the vesicular eruption.

Diagnosis

Dermatophytide (Ide or Id) reaction due to Tinea pedis.

Treatment and follow up

Patient was started on topical and oral antifungal along with antihistamines. Patient was reviewed after 2

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weeks and he responded well with the treatment with clearance of all lesions.



Fig. 1: Pompholyx like eruption on hands and feet



Fig. 2: T. pedis of right lateral toe cleft

Discussion

Id reaction is defined as distant, localized or generalized acute cutaneous reaction to an infectious and inflammatory skin condition^{1, 2}. The eruption has been referred to as dermatophytid, pediculid, or bacterid according to the corresponding infectious process³. The cause of the id reaction is unknown, but according to some authorities it is considered to be as immunologic in origin due to increased stimulation of normal T cells by altered skin constituents, dissemination of infectious antigen with a secondary response and hematogenous dissemination of cytokines from a primary site^{4,5}. Absence of fungi in the dermatophytid lesions and clearing of the dermatophytid lesions after the fungus

is eradicated are necessary to confirm a definitive diagnosis of a dermatophytid reaction. Id eruption tends to subside spontaneously when the primary focus is cured. In practice Id reaction is a clue that a person has tinea infection and it should alert the physician for abrupt treatment of acute tinea infection.

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Anaesthetic Management of a Case of Pheochromocytoma

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Abstract

Pheochromocytoma is rare, accounting for less than 0.1 % of hypertensive population. In this report, we describe a 40-year-old male a diagnosed case of pheochromocytoma who underwent adrenalectomy under general anaesthesia with epidural analgesia. The patient was adequately prepared with alpha adrenergic blockers. Intraoperative course was stormy but was managed with antihypertensives, inotropes and intravenous fluid. The patient was electively ventilated overnight and had an uncomplicated recovery.

Pheochromocytoma is a rare medical condition and an anaesthesiologist comes across it only a few times in his or her practice. Therefore there is a limited exposure in management. Furthermore hemodynamic instability encountered intra and postoperatively itself is a challenge. Hence management of a case of pheochromocytoma demands a meticulous preoperative preparation, advanced monitoring devices and good interdepartment coordination preferably in a tertiary medical center for a favourable outcome.

Key words: Haemodynamic instability, inotropes, pheochromocytoma, Sodium Nitroprusside.

Case History

A 40 year old male weighing 65 kg was diagnosed 2 months back as a case of pheochromocytoma. He presented with headache, sweating and palpitation along with hypertension. He was on treatment for 1 year with tablet prazosin 7.5 mg. twice daily, tablet aquazide 25 mg once daily and tablet amlodipine AT once daily. He was now posted for laparotomy and excision of the tumor.

On examination, he was alert, afebrile and cooperative. Pulse rate was 63/minute, regular and good volume. Blood pressure recording over right upper limb was 150/90 mm Hg in supine and 140/80 mm Hg in standing position. Systemic examination and airway assessment revealed no abnormality.

Investigations revealed a Hb-12 gm %, FBS-122mg/dl. Electrocardiogram showed left ventricular

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hypertrophy. Echocardiogram revealed concentric left ventricular hypertrophy with ejection fraction of 60%. MRI showed Lt adrenal mass. Renal CT angiogram revealed Lt adrenal mass and Lt renal artery stenosis. Suspecting pheochromocytoma specific tests were carried out which were positive only in the second time. 24 hour urinary catecholamines 625 mcg/day (normal 0-275) VMA-26.53mg% (normal<13.6) and metanephrines 1.83 mg/day (normal <1.0).

Anaesthetic Management

Pre operative preparation with Alpha blocker prazosin, amlodipine and aquazide ensured adequate control of hemodynamic status. Patient was given tablet diazepam 10 mg on the previous night and on morning of the surgery and was kept fasting overnight. Adequate blood was arranged.

In the operation theater pulse oximeter, ECG and NIBP were connected for monitoring. 16G intravenous cannula was inserted over right forearm and 20G cannula over left radial artery for invasive monitoring. The patient was then positioned in sitting position and 18G Epidural catheter inserted in T9- T10 space. For confirmation of epidural cannulation 2% plain xylocaine was injected and adrenaline was avoided. For analgesia 50 mcg of fentanyl in 10 cc normal saline was injected through the epidural catheter. Foley's urinary catheter was inserted after induction. This was followed by cannulation of right subclavian vein for CVP monitoring, fluid and drug administration.

After pre oxygenation, the patient was induced with midazolam 2 mg, xylocard 40 mg, fentanyl 150 mcg and propofol 140 mg. He was intubated with 7.5 mm cuffed oral endotracheal tube with rocuronium 50 mg iv. The blood pressure shot up to 180/100 mm hg which was managed by esmolol 30 mg in divided doses. Anesthesia was maintained with oxygen, vecuronium, fentanyl, midazolam, isoflurane, titrated doses of sodium nitroprusside and epidural bupivacaine in regular intervals. During intra operative handling of tumor there was a sudden surge of blood pressure with tachycardia which was managed by stepping up the dose of SNP, I.V boluses of xylocard and increasing the depth of anesthesia. After ligation of the tumor there was severe refractory hypotension, which was managed initially by colloids and incremental doses of norepinephrine. A very high dose of norepinephrine infusion was required to combat the hypotension.

After the surgery the patient was put on elective ventilation on CMV mode overnight in the post operative ward. Norepinephrine was gradually tapered. Fluctuation in blood glucose levels were managed with insulin and dextrose. Analgesia was maintained via epidural catheter with top up doses of bupivacaine. Patient was extubated next morning. The further course was uneventful. Patient was discharged home days later. The biopsy report confirmed the diagnosis of pheochromocytoma.

Discussion

In 1886, Fränkel made the first description of a patient with pheochromocytoma however the term was first coined by Ludwig Pick, a pathologist, in 1912. In 1926, Roux (in Switzerland) and Mayo (in U.S.A.) were the first surgeons to remove pheochromocytomas.

A phaeochromocytoma (PCC) or pheochromocytoma, is a neuroendocrine tumor of the medulla of the adrenal glands (originating in the chromaffin cells), or extra-adrenal chromaffin tissue that failed to involute after birth and secretes excessive amounts of catecholamines. Extra-adrenal pheochromocytomas (paragangliomas) are closely related, though less common, tumors that originate in the ganglia of the sympathetic nervous system and are named based upon the primary anatomical site of origin.

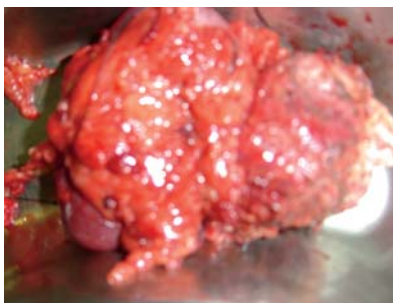
Incidence

Pheochromocytoma is seen in between 2-8 in 1,000,000 with approximately 1000 cases diagnosed in United States yearly. It mostly occurs in young or middle age adults, though presents earlier in hereditary cases. These tumors can form a pattern with other endocrine gland cancers which is labeled multiple endocrine neoplasia (MEN). Pheochromocytoma may occur in patients with MEN 2 and MEN 3 (MEN 2B).

In adults, approximately 80% of pheochromocytomas are unilateral and solitary, 10% are bilateral, and 10% are extra-adrenal. The tumors are made up of large, polyhedral, pleomorphic chromaffin cells. Fewer than 10% of these are malignant. Local invasion of surrounding tissues or distant metastases indicate malignancy.

Clinical Features

The signs and symptoms of a pheochromocytoma are those of sympathetic nervous system hyperactivity including: skin sensations, flank pain, hypertension,



Photograph of Adrenal Mass and Kidney

palpitations, anxiety diaphoresis, headaches and hyperglycaemia. A pheochromocytoma can also cause resistant hypertension. The most common presentation is paroxysms of headache, diaphoresis and palpitations.

Patients experiencing symptoms associated with pheochromocytoma should be aware that it is rare. However, it often goes undiagnosed until autopsy therefore patients might wisely choose to take steps to provide a physician with important clues, such as recording whether blood pressure changes significantly during episodes of apparent anxiety.

Diagnosis

The diagnosis can be established by measuring catecholamines and metanephrines in plasma or through a 24-hour urine collection. Care should be taken to rule out other causes of adrenergic excess like hypoglycemia, stress, exercise, and drugs affecting the catecholamines (methyldopa, dopamine agonists, or ganglion blocking antihypertensives). Various foodstuffs (e.g. vanilla ice cream) can also affect the levels of urinary metanephrine and VMA (vanillylmandelic acid). Imaging by computed tomography or a T2 weighted MRI of the head, neck, and chest, and abdomen can help localize the tumor. Tumors can also be located using Iodine-123 meta-iodobenzylguanidine (I123 MIBG) imaging.

Differential Diagnosis

The differential diagnosis of pheochromocytoma includes: anxiety disorders, paragangliomas essential hypertension, renovascular hypertension and carcinoid syndrome.

Treatment

Surgical resection of the tumor is the treatment of first choice, either by open laparotomy or else laparoscopy. Given the complexity of perioperative management, and the potential for catastrophic intra and postoperative complications, such surgery should be performed only at centers experienced in the management of this disorder. In addition to the surgical expertise that such centers can provide, they will also have the necessary endocrine and anesthesia resources.

Preoperative preparation

Either surgical option requires prior treatment with the non-specific and irreversible alpha adrenoceptor blocker (Phenoxybenzamine). Doing so permits the surgery to proceed while minimizing the likelihood of severe intraoperative hypertension. Some authorities

would recommend that a combined alpha/beta blocker such as labetalol also be given in order to slow the heart rate. Regardless, a "pure" beta blocker such as atenolol must never be used in the presence of a pheochromocytoma due to the risk of such treatment leading to unopposed alpha agonism and, thus, severe and potentially refractory hypertension.

The patient with pheochromocytoma is invariably volume depleted. In other words, the chronically elevated adrenergic state characteristic of an untreated pheochromocytoma leads to near-total inhibition of renin-angiotensin activity, resulting in excessive fluid loss in the urine and thus reduced blood volume. Hence, once the pheochromocytoma has been resected, thereby removing the major source of circulating catecholamines, a situation arises where there is both very low sympathetic activity and volume depletion. This can result in profound hypotension. Therefore, it is usually advised to "salt load" pheochromocytoma patients before their surgery. This may consist of simple interventions such as consumption of high salt food pre-operatively, direct salt replacement or through the administration of intravenous saline solution. The anaesthetic management of a patient with pheochromocytoma requires consideration in following points:

- Preoperative preparation with adrenergic blocking agents.
- Use of an anaesthetic agent which is not associated with release of endogenous catecholamines and does not sensitize the myocardium to high levels of circulating catecholamines.
- Adequate fluid and blood administration, including preoperative transfusion if necessary.
- Careful monitoring during surgery, including direct arterial pressure, central venous pressure, electrocardiogram, urinary output, and blood gas determinations.
- Ready availability of all pharmacological agents appropriate for the control of hypertension, hypotension, and cardiac arrhythmias.

To help assess the adequacy of preoperative management of pheochromocytoma, the following Roizen criteria¹ should be met in order to reduce perioperative morbidity and mortality:

- No in-hospital blood pressure >160/90 mm Hg for 24 hours prior to surgery.

- No orthostatic hypotension with blood pressure <80/45 mm Hg.
- No ST or T wave changes for 1 week prior to surgery.
- No more than 5 premature ventricular contractions per minute.

In our case report, the patient was adequately prepared with prazosin and amtas and aquazide and he met all the parameters of Roizen criteria. He was premedicated with diazepam before the surgery. There are reports suggesting the dangers of using drugs like morphine and atracurium which potentially release histamine because of the risk of provoking catecholamine release from chromaffin granules².

Choice of Anaesthesia

The combination of adequate regional anesthesia with general anesthesia provides satisfactory conditions for the initial surgical incision and exposure of the tumor. We chose to insert the epidural catheter also under local anesthesia before induction. Test dose was given only with 2% plain lignocaine. Adrenaline was avoided even in test dose for epidural catheter. A segmental blockade was achieved at mid to low thoracic level.

Monitoring

Peripheral venous, arterial and central venous catheters were placed under local anesthesia and hemodynamic monitoring was established together with ECG and pulse oximeter. However invasive arterial blood pressure monitoring was not possible due to machinery error. Extensive monitoring is required for such surgeries to monitor both the hypertensive crises and the post ligation hypotensive episodes. Manipulation of the tumor, however gently performed, usually causes a brisk hemodynamic response.

Drugs to Combat Haemodynamic Alteration

Intraoperatively, intravenous phentolamine, nitroglycerin and sodium nitroprusside are most often used to control blood pressure swings. Hull claimed that phentolamine is less satisfactory because tachycardia is an invariable problem³. We decided to use SNP to manage the intraoperative hypertension as there was ample evidence that SNP has been successfully used^{4,5,6}. The most widely quoted alternative to SNP is phentolamine, a competitive α_1 - and weak α_2 -adrenoceptor antagonist, which can be given intravenously as an infusion or as incremental doses of 1–2 mg. Just prior to

venous ligation of the tumor, anticipating hypotension, low dose dopamine was started along with volume loading and tapering of SNP.

Postoperative care

The main postoperative complication of surgery for pheochromocytoma is persistent arterial hypotension which may be refractory to intravascular volume replacement and adrenoceptor agonists. Our patient responded to Dopamine infusion which was later tapered and finally weaned off after 2days. Our patient also developed hypoglycemia during the post operative period and had to be given dextrose infusions. This hypoglycemia is due to the excessive rebound secretion of insulin after the removal of catecholamine secreting pheochromocytoma^{7,8}.

Conclusion

Pheochromocytoma constitutes only a small fraction of hypertensive patients. Many of these cases remain undiagnosed. An anaesthesiologist may encounter these cases only a few times in practice. Therefore even though many of us are aware of the management aspect academically handling such a situation may be very difficult. Preoperative preparation of the patients is of utmost importance.

The management of patients with pheochromocytoma remains a challenge for the anesthesiologist despite the advent of new drugs and techniques. Our role in the successful outcome of such surgeries begins from adequate pre operative preparation, extensive intra operative monitoring and careful follow up during post operative period. Prognosis is usually good if the tumor is detected early to avoid major complications related to catecholamine excess.

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Anaesthetic Management of Liver Resection Surgery in Birendra Army Hospital

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Abstract

This is a case report of a 65 yrs old male patient who underwent resection of left lateral segment (segment 2-3) of Liver for advanced Hepatocellular carcinoma. The case was performed under general anesthesia combined with epidural analgesia for post op pain management. During resection, Hypotension is maintained to reduce bleeding.

Key words: Blood and CVP pressure, Epidural analgesia, General Anesthesia, Hepatocellular carcinoma (HCC), left lateral segmentectomy

Introduction

Hepatocellular carcinoma (HCC) is frequently diagnosed at advanced stages and has a high mortality rate. Surgical resection is an important potentially curative therapy for liver tumors¹. Though Birendra Army hospital is a referral centre, it has its own limitation as far as advanced technology and equipment is concerned. Liver resection is considered a demanding surgery even in high volume hepatobiliary centres, This kind of surgery was performed for the first time in this hospital with positive outcome.

Case Report

65 years old male patient, diagnosed case of Hepatocellular carcinoma, planned for left lateral segmentectomy (segment 2-3) of Liver. He was admitted with history of decreased appetite, nausea and rapid weight loss since 3 months. In Pre anesthetic checkup, patient is malnourished, thinly built, with weight 46 Kg. He has no history of past operation and medical illness.

In personal history, he is smoker and occasional alcohol ingestion. On examination, his vitals are normal and chest is clear, Abdomen is soft with mildly tender in

right hypochondriac region. In investigation reports, his Hemoglobin is 11.7 Gm%, INR 1.16, platelet 1,98,000/mm³, Renal function test is within normal limit, Chest X-ray and ECG is normal. Liver function test is deranged with serum bilirubin 10.2(T) and 5.2(C); Alkaline Phosphatase 3524 U/L; SGPT 190 IU/L. In CT report, there is a mass in Liver segment 2-3 and gall bladder is not visualized.

One night before of operation, Patient is again re-evaluated and given tab. Diazepam 5 mg HS stat. Patient is categorized as ASA class III. Patient Party is explained about the operation and its consequences and advised to arrange 4 units of whole cross matched Blood and 4 unit of Fresh Frozen Plasma.

In operation theatre, Two I/V line, one 16g and one 18 g is opened and routine monitors are put on. First of all Epidural catheter is placed in T10 level and after confirmation with Injection Lignocaine 2% with Adrenaline 3ml, Morphine 3 mg is given for intra op and post op pain management. Then patient is anesthetized after giving I/V injection midazolam 2 mg, morphine 3 mg, Sodium

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Thiopental 225 mg and intubated with ETCT 8 mm size after giving Suxamethonium 100 mg. Then Anesthesia is maintained with Halothane and Vecuronium. Then CVP line is kept in Right internal jugular vein and continuous CVP pressure is monitored. Initial CVP pressure is 11 cm of water, and it is maintained at 10 -12 cm of water through out operation. Then Urinary catheter is kept and urine output is monitored hourly. Then surgery is started and total time of surgery is three hours. During intra operative period, initially blood pressure is maintained 90-120/60-90 mm of Hg and pulse is ranging 90-120/ mint. When resection of left lateral segment (segment 2-3) is started Surgeon ask to decrease Blood pressure and CVP pressure to reduce bleeding. To reduce Blood pressure and CVP pressure, we gave epidural injection of Bupivacaine 0.125% 12 ml, and Halothane inhalation increased up to 2%, then we gave I/V injection Lasix 40 mg, injection Nitroglycerine 50 micro Gm. Blood Pressure dropped up to 60-70/40-50 mm of Hg and maintained in that level Heart rate is increased up to 140/mint and to reduce it, Injection Esmolol 20 mg is given and heart rate is maintained in 100-120/mint, but CVP pressure can't reduce below 10 cm of H₂O. Parenchymal Resection of Liver is done with the help of Harmonic ultrasonic dissector and resection period is around 45 minutes and

there was very minimal bleeding (Fig 1,2,3,4). During this period Oxygen saturation is maintained 99-100%. After resection of liver parenchyma, intra hepatic bile ducts and oozing vessels are ligated. Then surgeon ask to bring Blood Presser back to normal level to check whether there is any oozing or bleeding, so Halothane inhalation reduced to 0.5% and Injection Mephentermine is given in increments' of 6mg in each time and given total 24 mg and Blood pressure increased up to 110/70 mm of Hg. There was no bleeding at resected site. Abdomen is closed in layers after putting drain. Later on, Blood pressure maintained 100-130/60-90 mm of Hg and heart rate 90-120/ mint till patient is shifted to post op ward. Total intra operative blood loss is Approx 300 ml, urinary out put is 900 ml. Total fluid received is Gelofusine (colloid) 500ml, Ringer lactate 1000ml and normal saline 1000 ml. Post operatively planned to put patient in elective mechanical ventilator support for over night and put in SIMV mode with I/V sedation and epidural analgesia (Injection Bupivacaine 0.125% 10 ml SOS). In 1st post operative day, Vitals are within normal limit and patient is comfortable so extubated. Epidural Analgesia is maintained for 72 hrs then removed. CVP line also removed on 3rd Post op day and pt is transferred to ward.

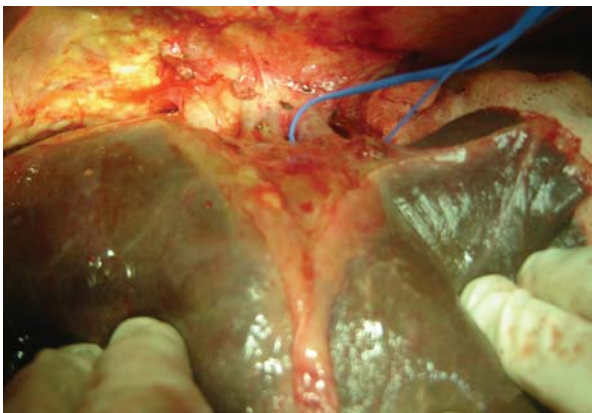


Fig. 1

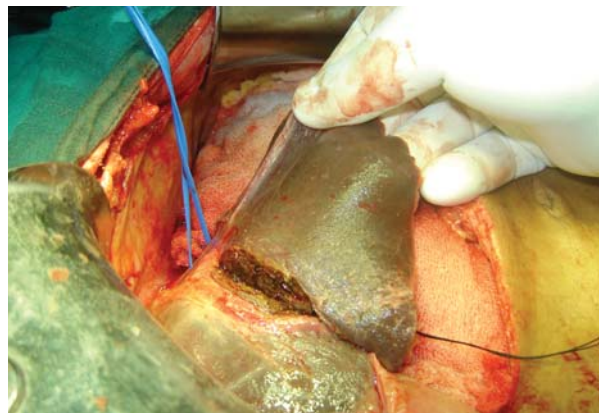


Fig. 2

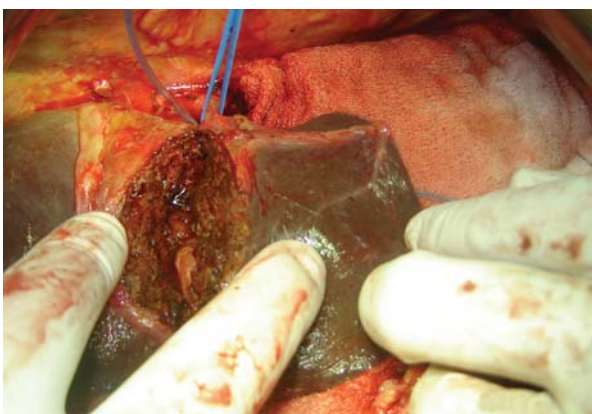


Fig. 3

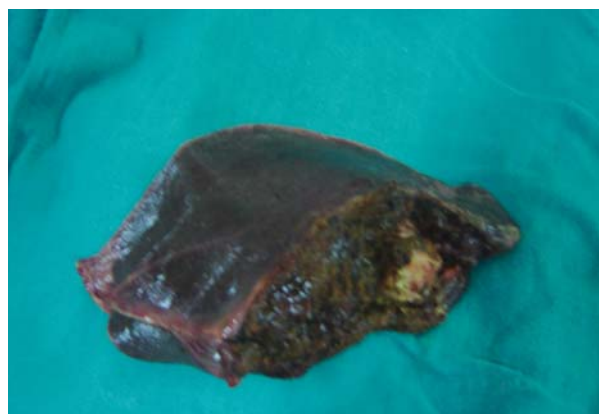


Fig. 4

Discussion

Hepatocellular carcinoma (HCC) is one of the most common malignant tumors worldwide. In order to reduce morbidity and mortality from HCC, early diagnosis and the Development of novel systemic therapies for advanced disease; including drugs; gene and immune therapies as well as primary HCC prevention are of paramount importance². Surgical resection is also an important potentially curative therapy for hepatocellular carcinoma. One of most important aspect of anesthetic management during resection of major part of diseased liver part is to decrease bleeding and to preserve the splanchnic perfusion. Poozar-Lukonorvvic, N et al, had published an article with conclusion that Epidural block, combined with general anesthesia improved splanchnic perfusion and Liver oxygen delivery. Thus routine use of this type of anesthesia is justified and could be recommended in liver surgery³. In our set up also, epidural anesthesia is always used combined with general anesthesia in major abdominal surgery and in this case also epidural catheter is placed at T10 level before induction and given morphine for intra and post op pain management. Local Anesthetic drug, Bupivacaine 0.125% 12 ml is given through epidural at the time of resection to decrease blood pressure and CVP pressure with improving splanchnic perfusion. In different studies it is mentioned that reduce CVP pressure is one of the important strategy to reduce bleeding. In one study it is concluded that the volume of blood loss and blood transfusion during liver resection correlates with the CVP during parenchymal transection. Lowering the CVP to less than 5 mmHg is a simple and effective technique to reduce blood loss during liver resection and delete the need for blood transfusion with its hazards⁴. Major resection with Low CVP allowed easy control of the hepatic veins before and during parenchymal transection. The anesthetic technique, designed to maintain Low CVP during the critical stages of hepatic resection, not only helped to minimize blood loss and mortality but also preserved renal function⁵. In one study, CVP during hepatic resection was not associated with intraoperative blood loss in living liver donors, suggesting that CVP may not be an important factor in predicting blood loss during hepatectomy in healthy subjects⁶. In this case, we could not reduce CVP pressure below 10 cm of water, but there was no significant bleeding during resection, it may be due to maintenance of low Blood pressure. In literature there are other methods too, to reduce bleeding during resection. In one study, it is suggested that the use of Aprotinine significantly reduces blood loss and transfusion requirements in patient undergoing elective

liver resection through subcostal incision⁷. Vascular occlusion is used to reduce blood loss during liver resection surgery. There is considerable controversy regarding whether vascular occlusion should be used or not during elective liver resections but intermittent vascular occlusion seems safe in liver resection. However, it does not seem to decrease morbidity. Among the different methods of vascular occlusion, intermittent portal triad clamping has most evidence to support the clinical application. In our case we have done inflow control and out flow control of portal, hepatic artery and hepatic veins, this procedure also help to reduce bleeding⁸. Despite these improvements, partial liver resections remain a major surgical procedure and carry the risk for excessive blood loss and a subsequent need for blood transfusion. Blood transfusions have been associated with systemic side effects, such as depression of the immune system. Several studies have suggested that perioperative blood loss or transfusions have a negative impact on postoperative outcome in Liver resection. Blood transfusion may have an impact on tumor recurrence has been found for patients with early stages of HCC. However, overall, no such effect could be demonstrated for patients undergoing partial liver resection for late stages of HCC⁹. In our case, Blood loss was very minimal that is only 300 ml and Blood transfusion was not required.

Conclusion

Anaesthetic management during liver resection is challenging as hypotension and low CVP should maintained to reduce bleeding with preserving circulation to vital organs. In this case, hypotensive surgery is obtained but definitive low CVP could not be attained. This case is done successfully for the first time in this hospital without any intra op and immediate post op complication.

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Sub Mucous Cleft Palate and Its Diagnosis and Management

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Abstract

Four different age groups of cases came to hospital with the complaint of severely nasalized speech and since childhood. Parents had already consulted to the physician in one of the valley Hospital who referred the patient for speech therapy without a clinical diagnosed as sub mucous cleft (SMC). Speech pathologist has to confirm of sub mucous cleft palate with the help of the plastic surgeon.

Sub mucous cleft palate is a significant cause of severe speech and language disorder. Aim of the paper is to make the clinician and laymen aware of the sub mucous cleft palate which is less commonly diagnosed partly due to ignorance and misdiagnosis.

Sub mucous cleft is the cleft of muscle and bony portion of palate it has got triad characters:- Bifid uvular, thin bluish line in the margin raphe (septum palludine) & hyper nasality. And we could feel palpable sign and speech and language disorder. It may have also lots of related problems like mental retarded, hearing loss, behavior problems etc.

Sub mucous cleft, is diagnosed and management by team approach like plastic surgeon, E.N.T. Surgeon, Dental surgeon, sp & lag pathologist and audiologist etc. Speech therapy is the one of the essential area for their better quality of life after surgery.

Introduction

Sub mucous cleft palate is characterized by triad characters:- Bifid uvular, thin bluish line in the margin raphe (septum palludine) & hyper nasality and also speech and language¹.

S.M.C is generally confused & ignored by clinician & parents until they prominently shown their speech & language problem. Some of them need to have surgery & speech therapy and some them need only speech therapy. They can be diagnosed & managed by team approach speech therapy is one of most essential area for their better quality of life after surgery.

Clinical Feature of SMC

Anatomically they must have got bifid uvular, thin bluish line in mid line soft palate, also seen bony notch in hard palate, attenuation of mid line raphe¹. And we could also see in function abnormalities like palpable

sigh in hard palate, nasalized speech & audible nasal air emission too. Most important is speech & language disorder.

Case Report

Four different age group of cases(w-7/m, x-8y/f, y-10y/m & z-13y/f) came with the complaint of speech & language defect since childhood. Some of them also complaining about ear discharge & diminished hearing. Some of them having positive family history some of them not. They were found that hard palate shown to be normal but soft palate shown to be normal but soft palate shown thin bluish line in middle & bifid uvula. Their voice & respiration was normal but resonance was hyper & defect of articulation.

All of them consulted to different hospital for about their speech problems. All the physician directly refer

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to speech therapy without diagnosis. Lastly they were conform diagnosis by plastic surgeon. After that they went under surgery. Then speech therapy was taken. This shows markedly improvement by taking speech therapy.

Discussion

Calnan (1954) has given triad sign of sub Mucous cleft palate that is Bony notch in hard palate, thin bluish line in Mid line of Soft palate and Bifid Uvula which is easy to recognized about the sub mucous cleft palate¹.

Pennbeker (1984) has done 25 years of research about language ability of cleft palate which was found that language ability of this child tend to reduced due to hearing loss, lacks of exposure in outer environments and introverts nature and frequent visited in hospitals etc². Trost-Cord Manes (1990)- found that cleft palate children tend to have velopharyngeal incompetence (V.P.I.) which leads to inability to sustain intra oral air pressure which can't balance between oral & nasal air flow during speech³. And also affects for feeding due to difficult to produce negative pressure during feeding. Mc William (1993) found that cleft palate children tend to have low language ability due to tensor palatine muscles defect which leads to Otitis media and hearing loss, because of hearing loss children tend to have low language ability⁴.

Related Disorder

Feeding problems: This problems are very common in infant stage of sub mucous cleft children. (W.B.jones) Among them are choking, excessive are intake requiring several burping, inability to create sufficient suction to pull milk from nipple, Nasal regurgitation and slowness to complete feeding (Arvedson 1992)⁵,
(all 4 cases found that nasal regurgitation)

E.N.T and hearing problems: Because of otitis media occurs more frequently in individual with sub mucous cleft need consistent E.N.T. check up⁶. Hearing loss is frequently common for these cases so Audio logical consultation is also critical. (2 cases found that otitis media & mild hearing loss and 2 cases found that normal ear condition)

Dental and Orthodontic: Complication related to cleft cases is also common so it required careful coordination between orthodontic and surgical management of lip, palate and alveolar ridge⁵. (All cases found that dental problems)

Psychological Problems: It may occur among children, teens and adult with sub mucous cleft as they face the same challenge in life as anyone else, plus some challenge unique to their condition, there were some people who adopt well to their condition they will survive as normal life with other hand who developed low self esteem and dissatisfaction with their communication defects⁷. (2 younger cases shown to be normal psychological condition and social adjustment but rest two adolescent shown to be little bit shy and introvert nature & didn't want to interact with other peer group.)

Speech and language problems

Sub mucous cleft children are prone to have speech and language inadequacy and severe problems Delay Speech. Language acquired is quite common for these children for 3-4 years. Some children we finds language deviant, however their language is normal still their speech characters are very effective⁷. They tend to have hoarseness of voice due to excessive pressure in larynx. Faulty placement of articulators is very common so they will have severe misarticulation duet to faulty learning & compensation articulation. And most common & remarkably find hyper resonance speech which their speech heard as nasalized speech. (all of them found to be nasalized speech and severe articulation defect.)

Speech & Language Disorder

Velopharyngeal Dysfunction: Includes hyper nasal resonance and nasal distortion of pressure consonant caused by inability to sustain and control of intra oral air pressure the result in inadequate balance of oral and nasal air pressure during speaking.

Velopharyngeal dysfunctions of these children are main caused by structure defect⁸.

Phonation- Resonance A lack of coordination in the timing of respiratory, larynges, articulators and Velopharyngeal system may give perception of hyper nasality and slow the speaking rate in speakers with Velopharyngeal incompetence⁸. Other symptom that may develop either from inadequacy control of air pressure due to Velopharyngeal dysfunction or from compensatory strategies, include in pitch range use of a soft aspirate voice, monotonous pitch and strangled and hoarseness of bvoice and extremely loud and effortful phonation. (All of them have hyper resonance and hoarseness of voice)

Articulation problems Either due to structural defect or faulty learning if they are repairing at late age they tend to have articulation disorder. Substitution of articulation and glottal stop, Distortion and Omission are very common for these cases⁹ (all of them have severe matriculation like glottal stop, substitution of sound etc.)

Language Disorder Although not as common as speech disorder delay early language development is possible, Children with sub mucous cleft. Generally present normal receptive language development severe factor however may cause with sub mucous cleft shows poor expression⁷ (all of them have normal language level).

Diagnosis

The TEAM approach to evaluating and treating cleft palate is most important. There is interdisciplinary and transdisciplinary is more common, in this team includes surgeon, Pediatrician, Dietician, Dentist, Psychiatric & Psychologist, Speech and language pathologist & Audiologist and Parents, school teachers, social workers etc¹⁰. All team members are equally Responsible for evaluating and treatment for cleft palate and sub mucous children¹¹.

Speech and Language pathologist: is responsible for monitoring and screening all areas of speech and language in clients with cleft lip/palate and sub mucous cleft. Evaluating procedure may be classified as screening to determine the need for in depth evaluation, Diagnosis evaluation and programming evaluation to identify therapy objectives, effective therapy procedure and the probable prognosis and program assessment to determine effectiveness of treatment, speech and language pathologist may be the recognize the possible syndromes¹².

Other client and family plays vital roles in the Team decision making process and including the family as team members. Parents and client education about cleft palate is an important components of the treatment process.

Treatment

All Team members are responsible for their treatment and management. They do their treatments respectably to their areas.

Speech and language pathologist provides treatment for language delay development, resonance

problems, articulation disorder and compensatory articulation like glottal stop and hoarseness of voice¹.

Children with sub mucous cleft are at high risk for developing speech and language disorder or delay. Therefore preventing the development of language delay or compensatory articulation error such as glottal stop are high priorities during the preschool year. Parents and other primary care givers is primary provider of language stimulation for children with sub mucous cleft¹. Clinician provides information and suggestion about language stimulation activities. If language delay of disorder found formal language therapy is identified, then parents and clinician should work as team. Family education about strategies for stimulation and languages development is an important aspect of comprehensive treatment for child with sub mucous cleft.

The parents, members of the health care team and school personnel's should cooperate in effort to build the child self esteem and self confident¹³, Because behaviors is an important variables in peer acceptance, they should set the behavior expectation for the child with sub mucous cleft as for any other child.

Conclusion

Sub mucous cleft(S.M.C) palate is seems to be less common may be due to improper diagnosis or over looked by physicians with or without speech problems. But S.M.C is the significant cause for speech & language problem & most of them tend to have hyper resonance S.M.C. is manage by team approach like surgeon, pediatrician, Audiologist & speech & language pathologist and speech therapy is one of the essentials for their better quality of life after surgery.

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Broncho - Hepatic- Fistula: A Complication of Rupture Liver Abscess

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Introduction

Abscesses of liver are relatively more common in Tropical countries in comparison to temperate climatic countries. Liver Abscess may be Pyogenic or Amoebic in origin.

If not checked early and treated in time, Liver Abscess may expand and Liver Abscess may rupture in any direction. Peritoneal rupture results in wide spread peritonitis or in the formation of Sub-Phrenic Abscess.

Extension through the diaphragm lead to Thoracic Empyema or rupture into the bronchus with the expectoration of large volume of Anchovy-paste coloured pus from amoebic liver abscess and bile stained pus from cholangitic abscess pyogenic.

Rupture of a Liver Abscess into the lung and bronchus with persistent bronchus Broncho-Hepatic Fistula may require formal thoracotomy, decorticotomy of the lung for Empyema and diaphragm resection of severely damaged pulmonary tissue and repair of diaphragm.

Case Report

A 24 years old serving soldier had fever and chest pain for the problem he went to Seti Zonal Hospital for the primary medical treatment. After antibiotic and analgesic treatment as his problem did not subside he was referred to Birendra Army Hospital 15/3/2063 (29th June 2006).

At Birendra Hospital he was admitted in Medical ward. On his chest x-ray detected Rt. side pleural effusion. He had diagnostic Rt. pleural tap with thick

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Fig.1: Shree Birendra Hospital

pus drained from Rt. pleural cavity. He was treated with injection antibiotics Taxim 1 gm TDS.



Fig. 2: Patient after surgery

He still continued to run high temperature with chest pain and clinically detected Hepatomegaly. On ultra sound abdomen large abscesses multiple were detected in Liver. Ultra sound guided Liver abscesses was aspirated pus from liver was found positive for

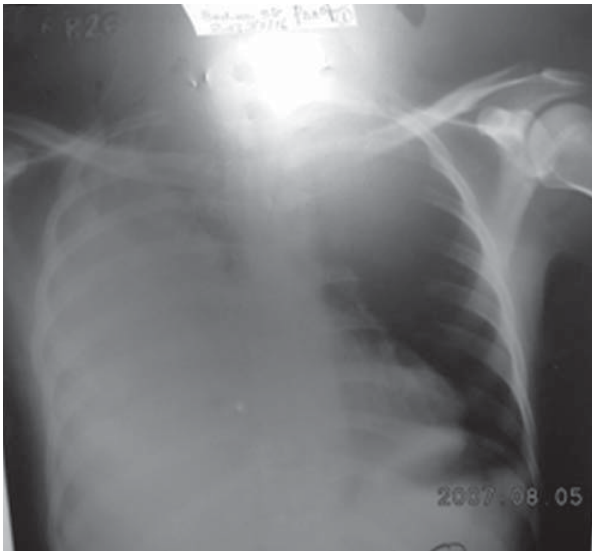


Fig. 3: Pre operative X-ray, Chest:

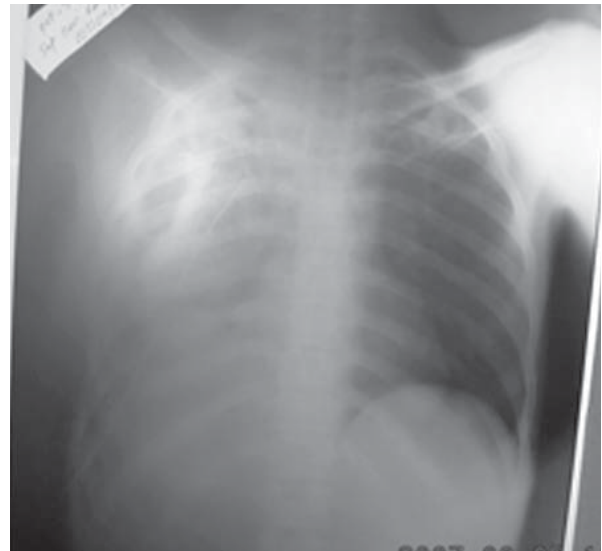


Fig. 4: Post operative X-ray, Chest:

E.Coli and pus from liver aspirate and pleural aspirate was negative for trophozoites of E.Histolytica.

Even with high dose of Inj. Antibiotics Taxim and Inj. Metronidazole. His condition continued to deteriorate.

On 05.04.2063 he started to cough with expectoration of purulent sputum mixed with bile.

Sputum was positive for Bile. Patient was suspected to have developed rupture of liver abscess with developments Rt. Emphyma thoracic, Lung abscess and formation of Rt. Broncho-Hepatic Fistula.

Patient was referred to cardio-thoracic surgery on 05.04.2063 he had Emergency Rt. Thoracostomy Chest Tube Drainage. Rt. chest tube was draining thick pyogenic fluid and air. The pleural fluid was positive for bile.

- In the pleural drain Air and bile leak was persistent.

- CT scan of the patient's chest and abdomen was done with contract enhanced.

CT scan of chest and abdomen revealed.

1. Multiple huge abscesses in liver.
2. Rupture of one of the liver abscess.
3. Rupture of Rt. Diaphragm.
4. Liver abscess community with Rt. pleural cavity with Empyema formation.

5. Collapse of Rt. lung lower lobe.

6. Rt. lung lower lobe communicating with liver abscess with formation of Broncho-Hepatic-Fistula.

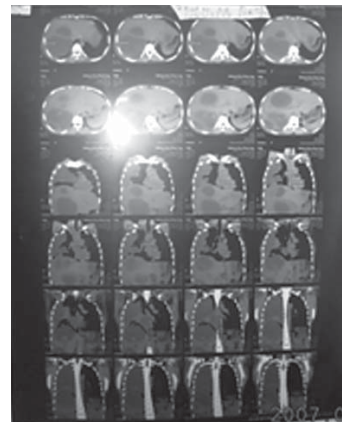


Fig. 5: Pre operative CT scan

- 11.04.2063 Rt. Thoracotomy operation was done.

- The operative findings were:

1. Huge multi loculated Empyema cavities over Rt. pleural cavity.
2. Collapse of Rt. lung upper and middle lobe with thicked pleura.
3. Rt. lung lower lobe destroyed and alherent to diaphragm.
4. There was large rupture in central tendon of Rt. diaphragm.

5. Large liver abscess cavity communicating to Rt. lung lower lobe.

Operation

1. Rt. Thoracotomy
2. Cleaning of pus from Rt. Pleural cavity.
3. Decortiation of Thick pleura on Rt. lung upper and middle lobes.
4. Rt. lower lobe of Rt. lung dissected and Rt. Lower Lobectomy done Rt. Bronchial opening closed with Proline suture.
5. Liver abscess cavity closed after opening cholangitic ducts opening were closed, Haemostasis secured.
6. Rt. Diaphragmatic rupture closed in layer with silk suture.
7. After Haemostasis and Aero-stasis secured chest closed in layers with one chest tube drain.



Fig. 6: During Operation

Post Operative Period

- Patient had smooth post operative recovery.
- Chest drain was continued for long time for 6 weeks with chest physiotherapy for satisfactory Expansion of obliteration Rt. lung and of Empyema cavity.
- Patient had antibiotics and Metronidazole for 6 weeks.

Follow up: Follow up CT scan of chest and Abdomen shows:

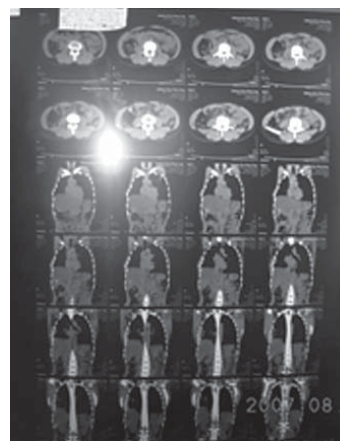


Fig. 7: Post Operative CT Scan

At 5 weeks post operative

1. Rt. lung expansion and decrease in Rt. Empyema cavity.
2. Reduction in size of liver abscesses.

At 12 weeks

- Rt. lung was fully Expanded with obliteration of Rt. Empyema cavity
- All liver abscesses were fully resolved.
- Patient was discharged on 29/08/2063 (15th Dec. 2006)

Follow up after one year of operation:

Patient was healthy with normal pulmonary function. No hepatomegaly and no liver abscess detected on ultrasound examination

Discussion

Liver abscess both pyogenic and Amoebic are still common in medical practices in Nepal. Most of the liver abscesses detected early do response well with Antibiotics and Metronidazole treatment.

Ultrasound and CT Scan picture of liver abscess may resemble with picture of CT scan of patient with hydatid cysts of liver. (Rajbhandary G.L.)

Early cases of Liver Abscess both amoebic and pyogenic do response well with conservative medical management with antibiotics and aspiration.



Fig. 8: Pre & Post Operative Photo of Patient of rupture of liver abscess with formation of Broncho-Pleural Fistula

But we still come across patients with complication of rupture of liver abscess. Liver abscess with rupture into Rt. Pleural cavity with formation with Broncho-Pleural Fistula has been reported by this author in Medical Journal of Birendra Army Hospital MJSBH, Vol III 2000. (Rajbhandary G.L)

Liver Abscess with rupture into Rt. Lung with direct communication of bronchial opening of Rt. lung with liver abscess cavity with formation of Broncho-Hepatic Fistula is not so common. Very few cases of rupture of liver abscess with formation of Broncho-Hepatic-Fistula has been published in Literature. (Sekar NN et al 1986, Kapoor OP 1990).

Acknowledgement

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Fig. 9: Patient Med Vac to Birendra Hospital

Conclusion

1. Early detection of Liver Abscess by Ultra sound examination of abdomen in patient with fever and hepatomegaly is advised to prevent complication of rupture of liver abscess.
2. Late complication of rupture of liver abscess with Broncho-Hepatic- Fistula (Broncho-Biliary-Fistula) can be managed satisfactory with surgery and antibiotics.

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Department of Maintenance in the Army Hospital: An Overview

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History

Ever since the hospital was constructed in the periphery of Chhauni on 15th Poush, 2043 BS and on 2047 BS, it was completed. Thus, the newly built hospital started its work in progress after its full completion and shifted to this area. This hospital comprises almost all the facilities and necessities as one requires generally, like post accident centre, MRI, pathology, OPD, special VVIP suites, and all depts. which are essential for the basic requirements of the hospital environment and new equipments obtained from French Protocols. So to say, today this hospital is the most sophisticated one across the country.

There were relatively increasing number of patients and inadequacy of old hospital which was near the Tundikhel and it still exists there in a small area (the then Tribhuvan Military Hospital established in the loving memory of the soldiers who lost their life in the world war), and the new concepts were came to replace the old one and construct the new hospital full of state of the art technology. Therefore, this new Birendra Hospital came into existence with a view to fulfill the new demands in course of time and space of the military vision.

Nowadays this hospital has been developing new technologies with the passing of time and requirements. Using the Army's own manpower and technicians, this is constructed so that decade's long awaiting dream of Nepalese Army finally came to the presence.

With its 300 or more beds, today hospital has its own facilities for almost all necessities, like all depts ambulance, medicines, equipments and buildings and the growing further requiring demands as per the needs

of the hospital and so on. Tribhuvan Military Hospital before this, had a different history late back to 1926AD which was built under the direction of Rana PM Chandra Shumsher with a view to commemorate the large no of soldiers who sacrificed their lives in the 1st world war. The Chief Engineer who constructed this hospital was Col Kishore Narsingh Rana and he involved in constructing this hospital fully for about 2^{1/2} years. The then all Army personnel as well as other gentlemen were happy to have this monumental hospital and all could get benefits after severe ailments as well as other diseases attacked on the build.

Physical Facilities

- a. This hospital has almost 60 ropanies land on its ownership and all its structures and substructures have been made by the use of Army's own super manpower and other relative accessories as well. This hospital has other facilities also like water supply, full electricity supply though load shedding, modern facilities relating to hospital appliances and all medical treatments and their departmental rooms, doctors and their teams, technicians etc. for soldiers and other patients separate buildings and rooms, doctors' quarters and mess and so on have been made as per requirements and in the future other facilities will also be made.
- b. Contrary to these aforesaid facilities, this hospital has to build other buildings for ladies, garage and maintenance separate building and workshop for quick repairing all medical equipments and other maintenance works. Perimeter wall has yet to be built for outer defense and hospital has its own

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maintenance manpower for the daily works inside it.

Main Hospital Premises

This is the main central attraction of the hospital area which is located near the Swayambhu Nath Temple and Army's topmost glory so far as concerned. This hospital has a key concept of Nepalese art and architecture and fusion of Nepalese Engineering vision and style. It has been constructed under the concept of medical symbol and three plus wings imaginings. At the side of the old structure, recently the newly constructed building known as administrative structure has been attached with its architectural background. Main entrance has been associated on the south and the whole structures and buildings have been surrounded by the gravel road made peripherally for defending purpose. Nearly 40 thousand sq ft area covers by the structure of this hospital and most of these structures inside are made out of the modern techno like aluminum structures and so on. High level facilities like sanitation, electricity supply and modern bathrooms and other treatment methodologies are additional privileges to the patients and soldiers so far and this will be made further development in the coming days.

Maintenance Dept. and its responsibility

With the initialization of newly built most state of the art hospital so far in Nepalese history especially in Nepalese Army on 2049 BS under the base of Lord Swayambhu Nath, there is a small single storied building in the eastern part of the main hospital building with its meager strength it has been established. On 2049BS the then hospital CO Bde Gen Madan Man Mall laid the foundation stone of this building for the maintenance purpose. The duties and responsibilities of this dept are highly important so far as the hospital is concerned. In this dept, though there are relatively low in strength and not adequately provided equipments they are using their knowledge and skill for the maintenance of the hospital from the early beginning to this day. Main responsibility of this dept is given under -

1. Daily reports of the machine and equipments by the concerned technicians.
2. Daily and periodical supervision of biomedical equipments in order to functioning at the time of necessity.

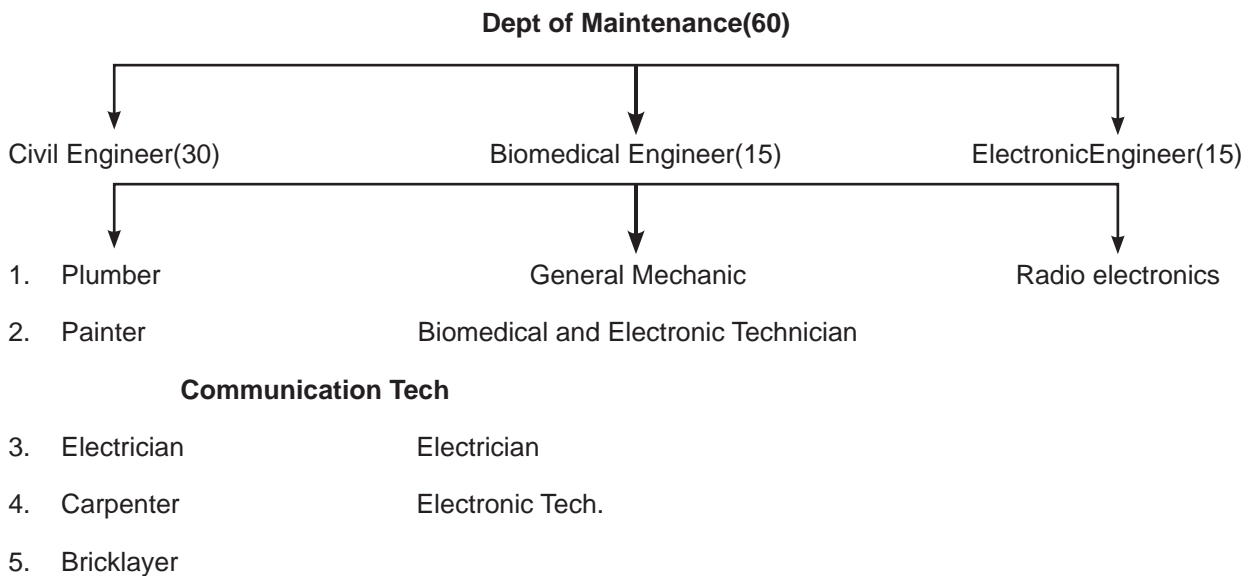
3. All the works to be repaired by the civil engineering groups in case of ordered by the concerned department and minor maintenance works to be done immediately as soon as possible under the officers' call.
4. Daily and weekly duty as per the hospital routine.
5. Repairing of heavy equipments i.e. electronic as well as mechanical.
6. Technical advice to the doctors and other concerned persons.
7. To assist the administration at the time of equipments' supply and tender and during the time of opening after supplied by the contractor.
8. To supply the water and electricity all over the hospital wards and outer building of the messes and maintenance works at the plants and other projects.
9. To estimate the works to be repaired during the time when it is deemed necessary on the demand of the departmental call.
10. Miscellaneous repairing works inside the hospital building when needed.

Technical Manpower and Budgeting

To run the office smoothly and steadily, it is very important to have a good knowledge and experienced technical team. For this purpose to be fulfilled we have to manage a good office building with modern tools and workshop. And on the other hand, there must be a budget allocation to the maintenance office for it can do the emergency maintenance works without dillydallies. A qualified technical team must be prepared to handle the situation under control; otherwise the works can't be done on time.

Strength and line Hierarchy

Common line hierarchy and maintenance strength must be as follow.



The structure of maintenance strength and manpower is quite low in number and quality where a few number is insufficient in repairing works and for the new projects to start and make. For instance, a civil branch needs more than 30 persons for day to day works inside the daily routine work whereas other biomedical and electronic branches need extra 30 persons to perform the works satisfactorily. A good strength of this dept has to be considered to perform the given task to be accomplished well in time.

Water Supply and Sewage Line

Within hospital area there is a government water supply line, so that hospital itself has made a good water supply management through deep boring and other supply means, that is from the outside of its area. Presently the supply has been made from Swayambhu Barud Khana and Sikshan Paksha area which provides relatively sufficient water. We have nearly 1 lack litres capacity water storage tank, from where we distribute the water inside hospital wards and the buildings outside hospital, but inside its area using our most sophisticated water filtration plant.

On the other side, we have managed a good sewage line to pass the trashes outside the main sewage supply line so that presently there is no problem of sewage distribution line inside this hospital for another 20 years.

Motivation and Initiatives

Cause to work immediately, a most significant object is motivation and initiative, without the proper

use of these terms one can't do the required job and duty properly. So for getting these terms fully utilized, technicians must be refreshed by way of giving them short-term courses and sending them to the foreign country like UN and any other countries to training. Therefore, their promotion and other minor facilities are of vital things during the time of service, so everyone can get maximum satisfaction only when these things are considered.

Difficulties and Challenges

Over the period of time, maintenance dept has been facing a difficult situation during the time when it has to be done some vital emergency works to be completed within a short span of time. Medical equipments and other building structures which have to be repaired within a difficult time. We have not yet found the most essential handy tools and equipments which are very crucial to maintain the appliances and physical structures. A modern workshop and office building with all the necessary tools is very essential for the hospital leaving other things behind. A good store house is needed in order to stack the engineering goods which can be used in the time of needed. An experienced team or group of technicians must be kept in a standby position that can do the job immediately after the order. A computer lab, store, bathroom, duty room, officer's rooms and basic common room attached with the main maintenance building is highly required to fulfill the situational difficulties under control. Some practical difficulties as for an example is if a water pump is broken, then it should be taken away for this repairment and likewise other things also are there. This simple thing if we make inside the building in

case of providing the tools and technician, we can fix it as soon as possible. So the repairing works have been delayed due to the lack of workshop and experienced technical person.

Conclusion

Maintenance works are very pivotal to the modern facilitated hospitals anywhere on the earth, not only in the hospitals, but also to the industries and factories. Since there are modern technologies installed, these works have to be done naturally, for this we have to make a good maintenance team or groups to work hand in hand together. New technologies to install and to repair are a

big challenge for the untrained persons since they are not familiar with those new scientific appliances. So giving them orientation class and short term technical training on such subjects, they can do the works well. This should be taken into consideration before going through the working procedures.

These are the possibilities of work to be done by the hospital, however, the maintenance dept has been doing many successful works during the years in the past and it will be continued for the days to come. Let's hope for its betterment and advanced with the passage of time.

MJSBH Guidelines

Introduction

Medical Journal of Shree Birendra Hospital (MJSBH) an official, peer reviewed, biomedical journal of the Nepal Army since 1998. It is published biannually and publishes articles on the following category: Original Article, Review Article, Case Report, Viewpoint and Letter to the Editor.

The aim of MJSBH is to increase the visibility and ease of use of open access scientific and scholarly articles thereby promoting their increased usage and impact. Hence, MJSBH grant the permission to **read, download, copy, distribute, print, search, or link to the full texts of these articles** which is available online (www.mjsbh.com.np) freely. Authors do not have to pay for submission, processing or publication of articles in MJSBH.

Scope of the Journal

The journal publishes articles related to researches done in the field of biomedical sciences related to all the discipline of the medical sciences, public health, health care management, including ethical and social issues pertaining to health. The journal gives preference to clinically oriented studies over experimental and animal studies. The Journal would publish peer-reviewed original research papers, case reports, systematic reviews and meta-analysis. Editorial, Guest Editorial, Viewpoint and letter to the editor are solicited by the editorial board.

The Editorial Process

The manuscripts will be reviewed for possible publication with the understanding that they are being submitted to one journal at a time and have not been published, simultaneously submitted, or already accepted for publication elsewhere. On an average, 25-30% of the manuscripts are rejected by the editors before a formal peer-review starts.

The Editors review all submitted manuscripts initially. Manuscripts with insufficient originality, serious scientific and technical flaws, or lack of a significant

message are rejected or if good article are written poorly then author are requested to re-submit after the revision according to MJSBH format. All manuscripts received are duly acknowledged. Manuscripts are sent to two expert reviewers without revealing the identity of the contributors to the reviewers. Each manuscript is meticulously reviewed by the MJSBH editor based on the comments from the reviewers and takes a final decision on the manuscript. The contributors will be informed about the reviewers' comments and acceptance/rejection of manuscript.

Articles accepted would be copy edited for grammar, punctuation, print style, and format. Page proofs will be sent to the corresponding author, which has to be returned within three days. Non response to proof copy may delay the publication of the same article or may even get rejected from the journal.

Instructions to Authors

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journals" developed by the International Committee of Medical Journal Editors (October 2006). The uniform requirements and specific requirement of MJSBH are summarized below. Before sending a manuscript authors are requested to check for the latest instructions available. Instructions are also available from the website of the journal (www.mjsbh.com.np).

Types of Manuscript and word limits

- **Original Article:** Randomized controlled trials, interventional studied, studies of screening and diagnostic test, outcome studies, cost effectiveness analyses, case-control series and surveys with high response rate. Up to 2500 words excluding references (up to 30) and abstract (up to 250).
- **Review Article:** Systemic critical assessments of literature and data sources. Up to 3000 words excluding references (up to >50 but <100) and abstract (250).

- **Case Report:** new/interesting/very rare cases with clinical significance or implications can be reported. Up to 1000 words excluding references (up to 10) and abstract (up to 100), up to three photographs.
- **Viewpoint:** These articles are personal views and allow you to express your own point of view on any issues relevant to health. We like these to include controversial subjects. Up to 800 words excluding reference (up to 5-8).
- **Letter to the Editor:** Should be short, decisive observation. They should not be preliminary observations that need a later paper for validation. Up to 400 words and 5 references.
- **Limits for number of images and tables:** for all the above-mentioned categories the number of images and tables should not be more than one per 500 words.

Manuscript Submission

Manuscripts must be submitted in clear, concise English language. Please submit one original and two photocopies of the manuscript and three sets of the original figures along with a Forwarding, Authorship and Declaration letter, sample is available in the MJSBH Forum. Authors also have to include a diskette (preferably CD) along with hard copies. All authors must give signed consent to publication in a letter sent with the manuscript. Note: An electronic copy of the article is mandatory through email. Authors should send their manuscripts to:

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The manuscript must be typed double-spaced on one side only on A4 size white paper with Arial Font, size of 12 points. Margins should be a minimum of 25 mm. Number each page at top right. The pages should be numbered consecutively, beginning with the title page. Each section of the manuscript should commence on a new page in the following sequence: title page and running head, structured abstract, key words, introduction, materials and methods, result, discussion, conclusion, acknowledgement, references, tables and figures with caption list. Particular attention should be taken to ensure the manuscript adheres to the style of

the journal in all respects. Please do not use any signs for e.g. "&" for "and" or "@" signs for "at the rate" and related signs; however, you can use abbreviations used in standard text books, provided the full form has been given when it first appears in the text.

The text of original articles should be divided into sections with the headings: Abstract, Key words, Introduction, Methods, Results, Discussion, References, Tables and Figure legends. For case report: Abstract, Key words, Introduction, Case Report, Discussion, Reference, Tables and Figure Legends.

Title Page

The title page should carry

1. Type of manuscript (e.g. Original article, Case Report)
2. The title of the article, which should be concise, but informative;
3. Running title or short title not more than 50 characters;
4. The name by which each contributor is known (First name, Middle name and Last name), with his or her highest academic degree(s) for record and institutional affiliation;
5. The name of the department(s) and institution(s) to which the work should be attributed;
6. The name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence about the manuscript;
7. The total number of pages, total number of photographs and word counts separately for abstract and for the text (excluding the references and abstract);
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9. Acknowledgement, if any; one or more statements should specify
 1. Contributions that need acknowledging but do not justify authorship, such as general support by a departmental chair;
 2. Acknowledgments of technical help; and
 3. Acknowledgments of financial and material support, which should specify the nature of the support. This should be included in the title page of the manuscript and not in the main article file.

10. If the manuscript was presented as part at a meeting, the organization, place, and exact date on which it was read.
11. Registration number of clinical trials.

Conflict of Interest Notification Page

To prevent the information on potential conflicts of interest from being overlooked or misplaced, it needs to be part of the manuscript. However, it should also be included on a separate page or pages immediately following the title page. MJSBH do not send information on conflicts of interest to reviewers.

Abstract

The second page should carry the full title of the manuscript and an abstract. The abstract should be structured for original articles as: Introduction, Method, Result and Conclusion. State the context (background), aims, settings and design, material and methods, statistical analysis used, results and conclusions. Below the abstract should provide 3 to 8 keywords arranged alphabetically. The abstract should not be structured for a review article and case report. Do not include references in abstract.

Introduction

Provide a context or background for the study (that is, the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be clear, and any prespecified subgroup analyses should be described. Provide only directly pertinent references, and do not include data or conclusions from the work being reported.

Methods

The Methods section should only include information that was available at the time the study was planned

or protocol written; all information obtained during the conduct of the study belongs to the results section.

Selection and Description of Participants: Describe your selection of the observational or experimental participants (patients or laboratory animals, including controls) clearly, including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age and sex to the object of research is not always clear, authors should explain their use when they are included in a study report; for example, authors should explain why only subjects of certain ages were included or why women were excluded. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use variables such as race or ethnicity, they should define how they measured the variables and justify their relevance.

Technical information: Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods, give reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration.

Reports of randomized clinical trials should present information on all major study elements, including the protocol, assignment of interventions (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding), based on the CONSORT Statement (<http://www.consort-statement.org>).

Reporting Guidelines for Specific Study Designs		
Initiative	Type of study	Source
CONSORT	randomized controlled trials	http://www.consort-statement.org
STARD	studies of diagnostic accuracy	http://www.consort-statement.org/stardstatement.htm
QUOROM	systematic reviews and meta-analyses	http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf
STROBE	observational studies in epidemiology	http://www.strobe-statement.org
MOOSE	meta-analyses of observational studies in epidemiology	http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf

Note: Authors submitting review article should include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract

Ethics

When reporting studies on human, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma.net/e/policy/17-c_e.html). Do not use patients' names, initials, or hospital numbers, especially in illustrative material. When reporting experiments on animals, indicate whether the institution's or a national research council's guide for, or any national law on the care and use of laboratory animals was followed.

Evidence for approval by a local Ethics Committee (for both human as well as animal studies) must be supplied by the authors on demand. Animal experimental procedures should be as humane as possible and the details of anesthetics and analgesics used should be clearly stated. The ethical standards of experiments must be in accordance with the guidelines provided by the CPCSEA (animal) and ICMR (human). The journal will not consider any paper which is ethically unacceptable. A statement on ethics committee permission and ethical practices must be included in all research articles under the 'Materials and Methods' section.

Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size. References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the computer software used.

Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat all the data in the tables or illustrations in the text; emphasize or summarize only the most important observations. Extra or supplementary materials and technical detail can be placed in an appendix where they will be accessible but will not interrupt the flow of the text, or they can be published solely in the electronic version of the journal.

When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables. Avoid nontechnical uses of technical terms in statistics, such as "random" (which implies a randomizing device), "normal," "significant," "correlations," and "sample."

Where scientifically appropriate, analyses of the data by such variables as age and sex should be included.

Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other information given in the Introduction or the Results section. For experimental studies, it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed. State new hypotheses when warranted, but label them clearly as such.

References

References should be numbered consecutively in the order in which they are first mentioned in the text (not in alphabetic order). Identify references in text, tables, and legends by Arabic numerals in superscript with square bracket after the punctuation marks. References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. Use the style of the examples below, which are based on the Citation Medicine formats used by the NLM in Index Medicus. The titles of journals should be abbreviated

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Journal

1. Vaidaya A. Complications and Management of Triplet Pregnancy. J Nepal Health Res Council. 2008 Oct;5:62-5.
2. Shrestha BM, Halor JL. Factors Influencing Long-term Outcomes following Renal Transplantation: A Review. J Nepal Med Assoc 2007;46(167):136-42.

Book

1. Magar A, Shrestha RK, Palikhey S, Shrestha S, Dhakal A. Angel's Concise Clinical Methods. Kathmandu: Makalu Publication; 2006.
2. Shapiro BM. Awakening of the invertebrate egg at fertilization. In: Mastroianni L, Biggers JD, eds. Fertilization and embryonic development in vitro: New York, Plenum Press, 1981: 232-55.

The commonly cited types of references are shown here, for other types of references such as electronic media; newspaper items, etc. please refer to ICMJE Guidelines (<http://www.icmje.org> or http://www.nlm.nih.gov/bsd/uniform_requirements.html or <http://www.ncbi.nlm.nih.gov/books/bookres.fcgi/citmed/frontpage.html>).

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Tables should be self-explanatory and should not duplicate textual material. Tables with more than 10 columns and 25 rows are not acceptable. Number tables, in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each. Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or an abbreviated heading. Authors should place explanatory matter in

footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use the following symbols, in sequence:

*, †, ‡, §, ||, ¶, **, ††, ‡‡

Identify statistical measures of variations, such as standard deviation and standard error of the mean.

Be sure that each table is cited in the text.

If you use data from another published or unpublished source, obtain permission and acknowledge that source fully. Submit such tables for consideration with the paper so that they will be available to the peer reviewers.

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Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers. Avoid abbreviations in the title of the manuscript. The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

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Do not use 'oh' (O) for 'zero' (0), 'el' (l) for one (1). Do not use space bar for indentation. Do not break words

at the end of lines. Do not insert a tab, indent, or extra spaces before beginning of a paragraph. Do not use software's facility of automatic referencing, footnotes, headers, footers, etc.

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While submitting a revised manuscript, contributors are requested to include, along with single copy of the final revised manuscript, a photocopy of the revised manuscript with the changes underlined in red and with the point to point clarification to each comment. The manuscript number should be written on each of these documents.

If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks from submission. Hard copies of the images, for articles submitted online, should be sent to the journal office at the time of submission of a revised manuscript.

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2. Authorship
3. Declaration
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- Previous publication / presentations mentioned
- Source of funding mentioned
- Conflicts of interest disclosed

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- Identity not revealed in paper except title page (e.g. name of the institute in material and methods, citing previous study as 'our study', names on figure labels, name of institute in photographs, etc.)

Presentation and Format

- Double spacing
- Margins 2.5 cm from all four sides

- Title page contains all the desired information (vide supra)
- Running title provided (not more than 50 characters)
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- Abstract provided (not more than 150 words for case reports and 250 words for original articles)
- Structured abstract provided for an original article
- Key words provided (three or more)
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- Uniformly American English
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- Numerals at the beginning of the sentence spelt out

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