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Pattern of Injuries in Women Sexually Assaulted

Sahu Geeta*, Jena Manoj**

Abstract

Background: Men's violence against women touches half the world's population. Rape is an act of power anger and dominance over another. Sex is a weapon to gain control. The aim of the study was to analyze the type and pattern of genital and extra genital injuries following sexual assault of women in relation to various modifying factors to corroborate the alleged crime. **Materials & Method:** All the rape victims that came for medical examination to our department formed the cohort of the study. Apart from medical examination, information was obtained by interviewing the victims, accompanying persons and records submitted by the investigating officers. **Results:** The study revealed general bodily injuries in 11.3% of victims whereas recent genital injuries were present in 13.2% victims. Majority of the victims were of age group 14-15 years and 18-19 years 35.8% each. Most victims were without prior sexual experience (85%). About 13% victims were parous. The incidence occurred mostly indoors 75%. In most cases there were single accused (96%) whereas in 4% cases there were multiple accused. The vaginal smear revealed spermatozoa in 19% of cases. About 30% of the women were examined within 72 hours of the crime.

Keywords: Rape; Injuries; Victims; Accused.

Introduction

Rape is not primarily the aggressive expression of sexuality but rather the sexual expression of aggression. It involves issues of control and hostility more than those of passion and desire. The rapist is not assaulting because he is sexually frustrated or deprived, same as that the alcoholic is drinking because he is thirsty. The unfortunate incident like rape degrades the very soul of the helpless female. She suffers from a tremendous sense of shame for no fault of her and the fear of being shunned by society and her near relatives including her husband. Instead of treating her with compassion and understanding she is humiliated.

Sexual intercourse is changed from being a joint and pleasant event to being a crime in this context. This alteration presents many problems concerning the credibility of the reported event and the proof of guilt of the accused and thereby involves the medical examiner as a witness.

Considering the crucial role of the medical finding towards justice to the victims, the present study has been taken up with an aim to identify the type and pattern of injuries in rape victims and the factors that influence such injuries. The factors modifying the injuries in sexual assault like age, prior experience of sexual intercourse and child birth of the victims, place of occurrence, number of accused involved and time of assault to examination were studied. The data collected were compared with previously published literatures.

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Materials & Methods

The materials for the present study included all the cases of rape victims referred to the department of Forensic Medicine and Toxicology, S.C.B. Medical College, Cuttack during the period from 1st January' 2011 to 31st December' 2012. A total number of 106 rape victims which came for medical examination to the department formed the cohort of the study.

Data collected were represented and evaluated in a proper proforma as per the requirement. It was analyzed whether the injury pattern and assault characteristics differed according to factors like age, marital status, earlier child birth by the victims, place of occurrence of the incident, number of accused involved and time of assault to examination. The injuries were identified by gross visualization. Vaginal smear was microscopically examined for spermatozoa in the departmental laboratory. The observations were tabulated and analysed by using Anova and Chisquare.

As per the norms, all the victims were properly and carefully examined in presence of a lady attendant after taking fully disclosed informed written consent. Wherever required, regarding circumstances, information were also obtained by interviewing the accompanying investigating officer, relatives and neighbours.

Result & Discussion

In the present study a total number of 106 rape victims included those examined during a duration of 2 years (from 1st January' 2011 to 31st December' 2012). Among the total 106 cases majority of the victims were of age group 14-15 yrs and 18- 19 yrs equal in numbers (35.8%). There were no victims of age group 12-13 yr (Table I).

Amongst total victims studied, 12 (11%) of them sustained general bodily injuries on their person (Fig 1). The victims showing bodily

Table I: Distribution of cases according age						
S. No.	Age Group	No. of Cases	%			
1	<10	2	1.8			
2	10-11	2	1.8			
3	12-13	0	0			
4	14-15	38	35.8			
5	16-17	8	7.5			
6	18-19	38	35.8			
7	20& above	18	17.3			
Total		106	100 %			



injuries had them either at a single site or in multiple areas. The most commonly found injury was abrasion followed by contusion [Table II]. Lacerations and bite marks were also found in some victims whereas a lone case having a ligature mark in the neck was encountered. The common sites of bodily injuries were lips, neck and arm. Injuries were also frequently found over cheek, breast, upper back, forearm and thigh. One of the victims sustained various linear scratch abrasions over the lower back and legs. Statistics in the US[1] showed in 47% of rapes, the victim sustained injuries other than genital injuries. In Canada^[2] statistics indicates that women are physically injured in 11% of sexual assault. A study by Sommers et al[3] revealed non-genital injuries predominate in sexual assault survivors. A study in USA[4] found 52% women had general body injuries after sexual assaults which were primarily associated with situational factors. Palmer et al[5] found genital injuries in 46% of the women examined (mostly minor). A study in France[6] revealed general

Table II: Distribution of different types of bodily injuries							
Sl No.	Site	Abrasion	Contusion	Ligature Mark	Bite Mark	Laceration	
1.	<u>Cheek</u>	+	-	-	+	-	
2.	Lip	+	+	-	-	+	
3.	Neck	+	-	+	+	-	
4.	Brest	+	-	-	+	-	
5.	Upper Back	+	+	-	-	-	
6.	Lower Back	+	-	-	-	-	
7.	Fore arm & Palm	+	-	-	-	+	
8.	Arm	+	+	-	-	+	
9.	Thigh	+	+	-	-	-	
10.	Leg	+	-	-	-	-	

Figure 2



body trauma in 39% of the cases examined in emergency.

The present study revealed that the recent genital injuries are observed in 13.2% of the victims of sexual assault [Table II]. Among many victims there was a delay in reporting and hence in examining. So we could get only old tears in hymen. Sugar et al[4] in USA found that 20% of victims had genital-anal trauma. Palmer *et al*[5] found genital injury in only 22% cases and suggested that the likelihood of recent genital injury following sexual assault remains unclear. Genital injury related to sexual assault is often an issue in court proceedings with the expectation that injuries will be found in genuine cases. Conviction rates are higher when the complainant has genital injuries. Presence of genital injury should not be required to validate an allegation of sexual assault particularly in the absence of non-genital injuries. A study in France [6] found genital trauma in 35.7% of cases examined in emergency.

Sommers *et al*[3], derived that not all women sustain injuries from sexual assault and Sugar *et al* [4] found 41% were without injury.

The present study showed that the recent genital injuries in Posterior Commissure, fourchette, fossa navicularis, labia majora, labia minora and hymen (Fig 2). Among these injuries mentioned, there were multiple types of injuries in some victims. In none of the cases we could encounter lacerations or extensive genital injuries. The recent hymenal tears were mostly placed both anterior and posterior but in some victims they were placed only posteriorly [Table III]. Sommers et al[3] in women of reproductive age studies found that genital injuries from sexual assault were sustained lower in the vagina (posterior fourchette, labia minora, hymen and fossa navicularis). In France by Grossin *et al*[6] hymenal, vulvo vaginal and anal lesions were respectively found in 11%, 20% and 7% of the cases examined in emergency.

In our study most of the victims were from age group 14-15 yr and 18-19 yr, constituting 35.8% in each age group. There were no victims of age group 12-13 yr. Recent genital injuries were also commonly found in these age groups being 5.6% and 3.7% in age group 14-15 yr and 18-19 yrs respectively. General bodily injuries were mostly found in age group 14-15 yrs [Table IV]. Similar observation was reported in the Statistics of the US[7] that suggest-more than half of all rapes of women occurs before age 18 (54%)and 22% of these occurs before age 12 years. Palmer *et al*[5] found 73% of the victims under 30 yr and only 4% were over 50

Table III					
Genital Injuries					
Recent genital Injuries	No. of cases	%			
Present	14	13			
Absent	92	87			
Total	106	100			
Position of recent hymeneal	tears				
Position	No. of cases	%			
Both anterior and posterior	5	62.5			
Only posterior	3	37.5			
Only anterior	0	0			
Total	8	100			

years. In their study non-genital injuries were found mostly in minors. Studies in Ethiopia [8] gave majority of sexual assault was between 12 and 21 years. Toronto studies[9] indicated that majority of rape victims are young women aged 16 to 24 years. A study in USA[4] showed genital anal injury was more frequent in victims younger than 20 years and older than 49 years. Our present study showed that most of the victims (85%) were without prior sexual experience and out of these

Table IV: Age group and injuries							
C No	A co Croup	No. of Cosos	0/	Recent genital in	juries	Bodily injurie	s
5. INO.	AgeGroup	NO. OI Cases	/0	No. of Cases	%	No. of Cases	%
1	<10	2	1.8	1	0.9	1	0.9
2	10-11	2	1.8	0	0	1	0.9
3	12-13	0	0	0	0	0	0
4	14-15	38	35.8	6	5.6	5	4.7
5	16-17	8	7.5	1	0.9	1	0.9
6	18-19	38	35.8	4	3.7	2	1.8
7	20 & above	18	17.3	2	1.8	2	1.8

14 - 15 yr: Highest incidence of injuries

Table V: Genital status and recent genital injuries					
Prior could intercourse ownerion co	No of Coord	0/	Recent Genital injuries		
	NO. OI Cases	/0	No. of Cases	%	
With	16	15	1	6.25	
Without	90	85	13	14.5	
P > 0.05			Chisquare		
Va sin al Daliusaru	No of Coord	0/	Recent Genital i	njuries	
	NO.01 Cases	/0	No. of Cases	%	
Child birth	14	13.2	0	0	
No child birth	92	86.8	14	15.2	
P > 0.05			Chisquare		

Table VI: Place of occurrence and bodily injuries						
Place	No. of Cases		Bodily injuri	es		
1 lace			No. of Cases	%		
Indoor	80	75	9	11.25		
Outdoor	26	25	3	11.5		
P < 0.05			Chi	square		

Table VII: Number of accused involved and injuries						
No. of accurad	No. of Coord	0/	Bodily injuries		Recent genital injuries	
No. of accused	INO. OI Cases	/0	No. of Cases	%	No. of Cases	%
Single	102	96.2	10	9.8	11	10.8
Multiple	4	3.8	2	50	3	75
P > 0.05 Chisquare						



Figure 3

women 14.5% sustained recent genital injuries. Victims with prior sexual experience comprised 15% of cases in our study of which 6% revealed recent genital injuries.

Similar to our findings, a study in Canada[10] showed, significantly more women without prior sexual intercourse experience had visible genital injuries. Another study in USA[4] showed that genital-anal injury was more frequent in virgins.

In the present our study 13% of the victims had already given child birth and these victims did not sustain any genital injuries [Table V]. The reason for this could be due to absence of hymen and lax vaginal canal walls. The current study showed that the crime frequently occurred inside the four walls of the house (75%) whereas the outdoor occurrence was the rest [Table VI]. The presence of general bodily injuries among indoor and outdoor victims was almost the same i.e. 11.2% and 11.5% respectively. Statistics of US[1] showed that 70% of the reported sexual assaults occurred indoors. Schiff[11] observed indoor occurrence in 52% cases. A study in France[6] found that the victim's home was most frequent place of sexual assault in 35% and 56% cases studies in two groups.

We found in most of the cases (96%) a single accused was involved and the rest 4% were

the victims of gang rape. Another study in India[12] revealed that 8% of the cases were gang rapes. Our study showed that 50% of the gang rape victims sustained bodily injuries whereas 75% of the victims showed recent genital injuries. Among those attacked by single accused 9.8% showed bodily injuries and 10.8% sustained recent genital injuries [Table VII]. Forensic Talk[13] revealed that victims of gang rape usually has no physical injuries but can have significant genital injuries.

In our study the vaginal smear revealed spermatozoa in 19% of cases (Fig 3). Although we found spermatozoa in the vaginal smear of 20 victims still recent genital injuries were seen in only 14 victims. This variation was attributed to the women's prior sexual experience. A study in France[6] detected spermatozoa in 30.3% of cases. Studies in America^[14] revealed a lack of spermatozoa is not conclusive evidence that an assault did not occur. Some offenders are sexually dysfunctional and do not ejaculate during the offense. There are some more reasons for absence of spermatozoa that included some may have had a vasectomy, used a prophylactic, have a low sperm count (due to heavy drug use or alcohol use), ejaculate somewhere other than victims clothes or body





Time in Hours

or fail to ejaculate if the assault is interrupted. We could examine only 30% of victims within 72 hrs. Among the rest there was delay in reporting and examination (Fig 4). Examination of the victims beyond 72 hrs goes against a positive finding of recent genital injuries and spermatozoa.

Conclusion

Among the total 106 cases of sexual assault general bodily injuries were present in 11.3% of victims and recent genital injuries were found in 13.2% cases. Majority of the victims were of age group 14-15 yrs and 18- 19 yrs equal in numbers (35.8%). Majority of the victims (about 85%) were without prior sexual experience. About 13% victims had previously given birth to children. The incidence occurred mostly indoor 75%. In most cases the accused were single (96%). Spermatozoa were detected in the vaginal smear of 19% cases. About 30% of the women were examined within 72 hrs of occurrence.

Recommendations

The examiner must provide psychological support and referral to the appropriate resources, treat physical injuries, collect legal evidence, document pertinent history, perform a thorough head to toe physical examination, give prevention of unwanted pregnancy and provide prevention of and screening for STDs.

The Emergency department staff and members of the criminal justice system need to be aware of the variable presentation of genital trauma related to sexual assault in women with or without certain modifying factors like victims age, virginal status, procreation history, place of occurrence, the number of accused involved and time of assault to examination. Non detection of spermatozoa though does not exclude, an assault yet its detection does confirm the alleged assault. Another modifying factor is the time passed between assault and examination which if more than 72 hrs hinders the positive findings of injuries as well as spermatozoa. This study contributes critical information to guide the identification of physical and laboratory markers of sexual assault to be integrated by clinicians and law enforcement agencies as forensic medical evidence.

Given the paucity of research and the current importance of physical evidence in criminal justice system, this study was designated to document the type and pattern of genital and extra genital injuries following sexual assault in relation to certain modifying factors.

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Blood Donor Deferral due to Anemia – A Study in the Blood Bank of a Tertiary Care Centre in Coastal South India

Galina D'Souza*, Kirana Pailoor**, Murali Keshava S.***

Abstract

Background: Blood donors are deferred from donating blood for several reasons, either permanently or temporarily. Anemia is a major cause for temporary deferral among donors. The aim of our study was to find the incidence of deferred donors due to anemia and to analyse the most common blood group deferred due to it. **Materials & Methods:** A retrospective study was done from January 2012-June 2012, in order to study the rate of deferral due to anemia in Father Muller Medical College Hospital Blood Bank. Data was collected by reviewing the deferred donor records over the six months period. It was analyzed by frequency and percentage. **Result:** Out of 3354 donors over six months period, 559 were deferred (203 females, 356 males). Of these 144 were deferred due to anemia (137 females, 7 males). The most common cause of deferral in women was due to anemia, accounting for about 67.48% of deferral in females which is in accordance with the literature available. It was seen that donors with A^{+ ve} blood group were mostly deferred. **Conclusion:** Donor deferral can be reduced by creating awareness, health education and also by administration of Iron –Folic acid supplementation.

Keywords: Anemia; Donor deferral; Blood donor.

Introduction

The paucity of healthy donors has always been a serious problem for blood banks.[1] Blood transfusion saves life and improves health. The requirement in India per year is 10million units, against the donated blood which is only 7.4 million units.[2] Individuals disqualified from donating blood are known as deferred donors. The rate and reason of deferral differ from region to region and one centre to another. Deferral is a painful and sad experience for blood donors as well as the transfusion centre.[3] Donor deferral should neither be too restrictive nor liberal as it is

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important to have adequate stock of blood and its components on one hand and on another hand safety of donor and recipient.[4]

Deferrals can be characterized as temporary/short term (1-56 days), long term (57-365 days) & permanent (>365 days). A majority of donor population in India are deferred due to Temporary but easily correctable causes such as anemia. Causes of anemia could be due to nutritional deficiency anemia due to blood loss, anemia due to chronic diseases and so on. Nutritional deficiency is of highest prevalence in India i.e. Iron deficiency anemia. It may be due to inadequate intake or poor bioavailability of dietary iron. The health of such individuals is compromised making it the reason for deferral.[5]

In this study we aim to assess the incidence of donor deferral due to anemia and also the most common blood group deferred due to anemia.

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Materials and Methods

Ethics approval for this study was taken from the ethics committee of our college and a retrospective study was conducted. Data from January 2012 to June 2012 was taken for the study. A total of 3354 donors came to the blood bank during the period. Detailed medical history was taken and donor questionnaire form had to be filled in which prospective donors were asked questions about the past medical history of infection, recent surgeries, medication, smoking, and previous blood donation were taken. In females, the regularity of menstruation was also asked. Blood groups also had to be written down.

Those fit on initial interview, were examined based on the hemoglobin, blood pressure and pulse. The hemoglobin cut off was set at 12.5%gm for both male and females. Finger prick blood was taken and hemoglobin estimation was done by Hemocue – Hb201+ (Hemocue AB, Angelholm, Sweden) and the data was analyzed by frequency and percentage

Results

Out of the 3354 voluntary donors, 559(16.6%) were deferred, of which 203 were females and 356 males (Table 1). Of these 559 donors who were deferred, 144 (25.7%) were deferred due to anemia alone, that is 137 (67.48%) were females and 7 (0.019%) were

Table 1: Showing donors deferred over a period of six months						
Total Donors In 6 Months Duration Deferred Percentag						
3354 559 16.6%						

Table 3: Showing most common blood differed due to anemia among both								
	genders							
Blood	Malas Famalas Tatal							
Group	Males Females Total							
AB ^{+ve}	-	12	12					
A ^{+ve}	2	44	46					
B ^{+ve}	1	19	20					
O ^{+ve}	1	27	28					
AB-ve	-	1	1					
A-ve	-	3	3					
B-ve	-	3	3					
O-ve	-	3	3					
Unknown	3	25	28					

males (Table 2).

All donors deferred due to anemia presented with mild anemia i.e. ranging between 10.5-11g% and the morphologic type seen was Microcytic Hypochromic.

It was also seen that maximum number of donors deferred due to anemia belonged to A^{+ve} blood group, both in males and females (Table 3).

Discussion

In this study, we analyzed donor deferral patterns due to anemia and a possible correlation between anemia and blood groups. Blood donation programme is the life – force of any blood bank and hospital.[6] Safe donor selection is the first step towards safe transfusion services.[6] There can be various reasons for deferral such as hypertension, diabetes mellitus, chronic liver disease, heart disease, chronic kidney diseases and so on.

Hemoglobin assessment is an important criterion for blood donor selection. The minimal cut – off is set at 12.5g% hemoglobin content in the donated unit. A healthy blood donor

Table 2: Showing gender distribution among deferred donors and donorsdeferred due to anemia								
Females Males Total								
Deferred due to anemia	137 (67.48%)	7 (0.019%)	144 (25.7%)					
Deferred due to other causes	66	349	415 (74.3%)					
Total	203	356	559					

Table 4: Showing comparison of various studies						
Studios Conducted	Place	Percentage deferred				
Studies Conducted	riace	due to anemia				
BahadurS et al[5]	New Delhi	15.5%				
KhanS et al[4]	Pakistan	13.33%				
Unnikrishnan B et al[7]	Manipal	12.34%				
Chaudhary RK <i>et al</i> [8]	Lucknow	18.6%				
Bashwri L[9]	Saudi Arabia	15.5%				
Sareen R et al[10]	Jaipur	39.42%				
Kulkarni N[11]	Bellary	34.31%				
Radhiga ST et al[12]	Chennai	30.97%				
Girish CJ et al [2]	Shimoga	19.45%				
AwasthiS et al[6]	Moradabad	33.5%				
Rabeya Y <i>et al</i> [13]	Malasysia	40.7%				
Agnihotri N[14]	Pune	55.8%				
Jashnani KD[8]	Mumbai	27.5%				
Present study	Mangalore	25.7%				

loses about 200-250 mg of Iron per unit of donated blood.[5] Despite efforts by our government towards reducing anemia due to nutritional deficiency, it is still very common in our country. Hemocue is a portable equipment that is able to spectrometrically determine hemoglobin. It uses 10 μ l of blood capillary absorbance of azidemethemoglobin using a cuvette containing a dry reagent system and a dual wavelength photometer, it is more accurate than microhematocrit.[1]

Various reasons are cited for lower number among females such as fear of blood donation, lack of awareness and motivation among females about the importance of blood donation and so on.[2]

Studies conducted by Bhadur S *et al*[5], Khan S *et al*[4], Unnikrishnan B *et al*[7], Chaudhary RK *et al*[8], L Bashwri[9] and Girish CJ *et al*.[2] All had a deferral rate much less than ours whereas Sareen R *et al*[10], Kulkarni N[11], Awasthi S *et al*[6], Radhiga ST *et al*[12], Y Rabeya *et al*[13] and Agnihotri N[14] had a much higher deferral rate (Table 4).

In our study females deferred due to anemia was 67.48%. This was similar to a study done by Y Rabeya *et al*[13] and Bahadur S *et al*[1], where it was found to be 69% and 74.1% respectively, it is in contrast to the studies by Bahadur S *et al*[5] and Kulkarni N[11] who had a deferral rate of 34.2% [5] and 43.96%

respectively. The males deferred due to anemia was less than 1%.

All of the deferred donors in our study presented with mild anemia ranging between 10.5-11 g% and had Microcytic Hypochromic morphology on blood smear, which is in contrast to the study conducted Bahadur S *et al*[5] in which the majority of them had a normocytic normochromic morphology on blood smear.

In case of blood Groups, it was seen that maximum number of donors deferred due to anemia had A^{+ve}, followed by O^{+ve}. It was seen that Rh^{-ve} blood group had a lower deferral rate, probably due to lower percentage of population having Rh^{-ve}type of blood group. However on thorough literature search, hardly any studies on prevalence of blood group amongst deferred donors were available.

It has been suggested that hemoglobin standard must be lowered to increase female eligibility.[9] The deferral of donor due to any reason has a negative impact and many temporarily deferred potential donors do not return to donate in the future. These Anemic donors should be informed, referred for further work up, treated appropriately and motivated to return for blood donation, thereby improving the public health and also decreasing the donor deferral due to anemia.[5,12,15,16] Health authorities should implement policies for preventive measures to decrease the deferral as it indirectly reflects the health status of our country.[6]

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Evaluation and Interpretation of Factors Governing Fatal Traumatic Acute Subdural Haematoma

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Abstract

Background: Traumatic acute subdural haematoma (ASDH) remains one of the most fatal of all head injuries. Its fatality is governed by various factors. **Materials and Method:** Study of 101 cases of head injuries having a subdural hematoma with a definite history of trauma were carried during Sept 2011 to Aug 2013 in central morgue, SCB Medical College, Cuttack. Criteria examined were age, sex, volume, site, size, extension, form and character of ASDH. **Results:** The volume of fatal ASDH ranged from 15- 220 ml, having a male preponderance, with a highest peak of mean volume of 104.83 ml observed in between 71- 80 years of age. It is mostly attributed to road traffic accident (RTA) (86.87%), involving mostly frontal areas, usually fluid, blood in form, diffuse and frequently associated with subarachnoid haemorrhage (24.75%). **Conclusion:** Subdural haemorrhage in its form, location and amount is a determinant factor for the fatality. By post mortem evaluation of such haemorrhage in detail throws vital clues and information to the physician and surgeons to prevent such catastrophe in future patients.

Keywords: Acute subdural haematoma; RTA; Traumatic head injury.

Introduction

Head injury is the most common of all regional injuries and is a large contributor to mortality and morbidity throughout the ages also most important in forensic practice. Among Intracranial haemorrhages Subdural haemorrhage (SDH) is the 2nd most common form seen in head injury. Subdural haemorrhage is found in 26-36 % of serious head injury cases.[1,2] Seventy percent (70%) of all subdural haemorrhages occurs due to fall & assault, and 24% are due to vehicular accidents.[3] It is classified into three types according to the time of onset of symptoms

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after the injury- Acute, Sub-acute, Chronic.

Acute Subdural haemorrhage is reserved for those in which haemorrhage occurs immediately or there is very rapid collection of blood in the subdural space which usually manifests within first 72 hours of the infliction of head injury. It arises mostly from rupture of large bridging veins, one of the cortical arteries and surface cerebral vessels and is known to be the marker of brain movement either of linear or angular motion. Such haemorrhage is a well- recognized fatal event in cases of injury in children. The mortality rate associated with acute SDH is around 60-80%.[4] The frequency of SDH, its form, state, amount along with area of distribution is said to be variable even with a fixed magnitude of force ending into either fatality or recovery.

Materials & Methods

The study was carried during the period of September 2011 to August 2013 and total 2483

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cases of head injuries were autopsied at the Central Morgue of SCB Medical College & Hospital, Cuttack. Out of 2483 only 101 cases, those had a head injury along with acute subdural haemorrhage with a definite history of trauma irrespective of the manner of infliction of injury to the head which was within three days at the time of death. A detailed post-mortem examination is conducted in each case as per Virchow's method. The volume, size, site and extension, and character of subdural hematoma are recorded. For the volume measurement of subdural hematoma, the hematoma is allowed to drain and the residual volume in the cranial fossa is removed with the help of a sponge. The collected hematoma is measured in a graduated volumetric flask. In case of firmly clotted hematoma, the measurement is done by displacement of a measured volume of water.

Results

A total of 101 cases having SDH arises out of traumatic head injury is taken for study having an age range of 5 yrs to 95 yrs, with an overall mean age of 41.84 years.

This study comprises of 85 males and 16 females of head injury cases with manifestations of acute subdural haemorrhage leading to death. The age range of male victims is from 19-95 years with a mean of 40.99 years, with a major peak in the 2nd decade with 28 (32.94%) cases. The age range of female victims is from 5-75 years with a mean of 46.38 years, with a major peak in the 3rd decade with 6 (37.5%) cases. The maximum incidence of SDH is observed between 21- 50 years, which constitutes 71 (71.28%) cases irrespective of sex, with a peak incidence of 28 (27.72%) cases

Table 1: Age and sex wise distribution of SDH cases						
A ao Romao		Sex wise	Tatal	Demonstrate		
(years)	Male	Percentage of male (%)	Female	Percentage of females (%)	of cases	(%)
0-10	0	0	1	6.25	1	0.99
11-20	3	3.53	0	0	3	2.97
21-30	28	32.94	0	0	28	27.72
31-40	19	22.35	6	37.5	25	24.75
41-50	16	18.82	3	18.75	19	18.81
51-60	6	7.06	4	25	10	9.90
61-70	8	9.41	0	0	8	7.92
71-80	4	4.71	2	12.5	6	5.94
>80	1	1.18	0	0	1	0.99
Total	85	100	16	100	101	100

 Table 2: Volume of subdural haemorrhage in different age

groups							
A	Volume of SDH		Tetalmant				
(years)	Range (ml) (15 ml to 220 ml)	Mean (ml)	cases				
0-10	34	34.00	1				
11-20	18-35	27.00	3				
21-30	18-162	47.82	28				
31-40	20-210	53.04	25				
41-50	15-220	73.84	19				
51-60	31-104	57.00	10				
61-70	30-170	90.13	8				
71-80	34-184	104.83	6				
>80	55	55.00	1				
Total		60.97	101				

Table 3: Distributions of accidental cases of fatal SDH and type of victims in RTA case								
	Fa11	E-11		RTA (Type of victims)				
Accidental	Fall Assidental Gram DTA		2 Wheeler			_		
Accidental h	height	NIA	Pedestrian	Cycle	Rider	Pillion	3 Wheeler	4 Wheeler
						Rider		
No of Cases	13	86	34	9	27	13	1	2
Percentage (%)	13.13	86.87	39.53	10.47	31.4	15.12	1.16	2.33
Total	99		86		-			

Table 4: Nature of SDH observed in fatal SDH cases							
CDU		Diffus	_				
5DH	Unilateral		Pilatoral	Localised	Total		
	Right	Left	Dilateral				
No of Cases	24	17	27	33	101		
Percentage	23.76	16.83	26.74	32.67	100		

in the age group of 21-30 years. least incidence of SDH is observed at extremes of ages in 2 (1.98%) cases (Table 1).

Table 2 revealed that, the volume of fatal SDH found among the victims ranged from minimum of 15 ml to a maximum of 220 ml with an overall mean volume of 60.97 ml, the highest peak of mean volume is 104.83 ml and is found in 6 cases between 71- 80 years of age. Among the young adults i.e. 18-40 years, the mean volume observed is 49.04 ml in 56 cases and among the older population i.e. age more than 60 years, the mean volume observed is 81.84 ml in 19 cases which is significantly higher than the young population.

In this study head injuries with SDH is most commonly observed in accidental cases which is 99 (98.02%) out of 101 cases of our study. Only 2 (1.98%) cases are sustained due to homicidal assault in blunt force trauma and no suicidal cases are reported. Table No. 3 shows that among the 99 victims of accident, most cases are attributed to RTA [86 (86.87%)] and fall from height accounts for 13 (13.13%) cases. Among the different type of victims attributable to RTA, pedestrians accounts for the highest [34 (39.53%)] number of cases, followed by two wheeler riders in 27 (31.40%) cases, which is followed by the two wheeler pillion riders in 13 (15.12%) cases and cyclist in 9 (10.47%) cases.

It observed from Table 4 that the diffuse SDH is commoner (67.33%) than localised SDH (32.67%) and Unilateral diffuse SDH is the commonest variety seen in 41 cases (40.59%) and mostly seen on the right side in 24 cases (23.76%).



Table 6: Associations of different forms of SDH in relation to survival time						
Elapsed time from injury to death	0 to 12 hrs	>12 to 24 hrs	>24 hrs to 4 Days	>4 to 8 Days	>8 to 13 Days	>13 to 17 Days
Fluid	21	8	9	4	2	1
Clot	6	10	5	0	1	1
Mixed	8	6	8	9	2	0
Total (101)	35	24	22	13	5	2

The location of SDH over different outer surface areas of brain are depicted in Table 5 that SDH is most commonly observed at frontal area i.e. in 90 cases out of which 33 cases are seen bilaterally, followed by the right side in 29 cases. The next most common area to be found is parietal i.e. in 88 cases followed by temporal and occipital 87 and 86 cases respectively. A single case of inter-hemispheric location of SDH is also observed. SDH is most commonly found in the middle cranial fossa i.e. in 50 (49.50%) cases and most commonly on the right side, followed by 33 (32.67%) cases in the posterior cranial fossa. The least common site is the anterior cranial fossa i.e. in 8 (7.92%) cases out of 101 cases.

The associations of different forms of SDH in relation to survival time are depicted in Table 6 that, the large blood clots are seldom seen later than 4 days. Within three days, i.e. in this period for acute SDH maximum cases are associated with fluid blood, comprising of 38 (46.91%) cases. Within 3 to 17 days the mixed form accounts for most of the cases i.e. in 11 (55%) cases.

Table 7 depicted that the Isolated (pure)

SDH is found in about 17% of cases and cases of SDH associated with other intracranial hemorrhages (like SAH, EDH, ICH, IVH etc.) found in about 83% of cases. The fatal volume of isolated SDH seems to be ranging from 18 ml to 220 ml with a mean volume of 62.65 ml as this volume of SDH is not associated with any other forms. Maximum numbers of SDH cases are found in the volume range of 25 ml to 75 ml accounting for 71 (70.29%) cases. The highest peak is seen between 25 ml to 50 ml and seen in 49 (48.51%) cases.

It is observed from the findings of study that the SDH is most commonly found associated with subarachnoid haemorrhage i.e. in 25 (24.75%) cases. The 2^{nd} commonly associated with SDH is intracerebral haemorrhage and SAH combination in 11 (10.89%) cases, which is followed by extradural haemorrhage & SAH combination association in 9 (8.91%) cases.

Disscussion

 Table 7: Volume of SDH associated with other intracranial haemorrhages
 Cases of SDH associated with Vol of SDH in Cases of Total no of cases other intracranial hemorrhages ml isolated SDH (%) (SAH, EDH, ICH, IVH etc.) 0 - 252 8 (7.92%) 6 >25 - 50 9 40 49 (48.51%) 2 >50 -75 20 22 (21.78 %) 2 >75 -100 4 6 (5.94%) >100 -125 0 10 10 (9.9%) 0 >125 - 150 0 0(00%)2 1 >150 - 175 3 (2.97%) 2 >175 - 200 0 2(1.98%)>200 1 0 1(0.99%)17 (16.86%) 84 (83.14%) Total 101 (100%)

Among the 101 cases studied, males outnumbered females (84% Vs 15.84%, a ratio

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of 5.31: 1). The age range of male victims is from 19-95 years with a mean of 40.99 years, while in female victims the age range is from 5-75 years with a mean of 46.38 years. The highest number of victims who suffered fatal traumatic SDH is in the age group of 21-50 years with a mean of 41.84 years i.e. in 71 (71.28%) cases. It has also been reported by *Kiboi JG*[5], in his study the mean age was 41.1 years \pm 19.65 with a range from 2 to 96 years, the majority (44.8%) of the patients were aged between 26 and 45 years while 3.9% and 17.8% were aged below 13 years and older than 61 years respectively.[5]

We observed a range of 15 ml to 220 ml of fatal SDH volume with an overall mean volume of 60.97 ml in 101 cases of our study. The highest peak of mean volume is 104.83 ml is found in 6 cases between 71 to 80 years of age. This finding is similar to observations made by Stone JL[6], who reported that hematoma size is variable and has been reported to range from 10 ml to 250 ml, with a mean volume of 81 ml.[6] Highest numbers of pedestrians are affected in RTAs i.e. in 34 (39.53%) cases followed by motorcyclist riders i.e. in 27 (26.73%), pillion riders in 13 (15.12%) cases and cyclist in 9 (10.47%) cases. This is because in our locality pedestrians are the frequent road users as footpaths meant for their use are occupied by hawkers to such an extent that pedestrians are forced into the roads.

The nature of SDH as evidential displays the dominance of the diffuse nature of SDH in 68 (67.33%) cases followed by the localized nature in 33 (32.67%) cases. Among them, unilateral diffuse SDH accounts for the highest number [41 (40.59%)] of cases, with 24 cases on the right & 17 cases on the left side. As SDH is the marker of acceleration and deceleration injury and is due to chaffing effect of brain matter in linear and angular movement, the small vessels along with bridging vessels are affected. The surface cerebral veins also contribute to its origin.

SDH is mostly found over the frontal area (90 cases), followed by parietal region (88

cases), followed by temporal area (87 cases), and the least over the occipital region (86 cases). Our observation regarding SDH location is consistent with the observations of *Kiboi* JG[5], studied 259 patients with traumatic ASDH and found that the most common location of SDH was the parietal lobe with 180 cases, while the occipital lobe accounted for the least with 30 cases, frontal lobe with 110 cases and temporal with 51 cases.[5]

A single case of interhemispheric SDH is observed in our study, which is a very unusual site of SDH. This observation is consistent with the other observer *Sadrolhefazi A*[7], reported that only about 100 cases of interhemispheric ASDH were seen till 1997.[7]

Regarding the different forms of SDH observed at autopsy, large blood clots are seldom seen later than 4 days. It is observed that SDH is found associated with other intracranial haemorrhages like SAH, EDH, IVH, and ICH in 84 (83.17%) cases and is most commonly associated with Subarachnoid Haemorrhage i.e. in 25 (24.75%) cases. The 2nd common vascular injury associated with SDH is Intra cerebral haemorrhage and SAH combination i.e. in 11 (10.89%) cases, which is followed by Extradural Haemorrhage & SAH combination i.e. in 9 (8.91%) cases. Our observation is similar to the one made by Mallory A[8], who observed that subarachnoid haemorrhage and contusions were among the most common serious injuries associated with SDH.[8] The association of SDH and EDH with SAH invariably is a common finding in traumatic head injury than the pathological entities.

In our study, isolated (pure) SDH is found only in 17 (16.83%) cases. This observation coincides with the observations made by *Cox WA*[3], Subdural hematomas can occur singularly in approximately 13% of cases, suggests that isolated acute SDH, acting as a compressive lesion, is an uncommon clinicopathological entity.[3]

Conclusion

According to this study Subdural haemorrhage is always of a major significance in the absence of injury to the skull and brain. The haemorrhage in its form, location and amount is a determinant factor for the fatality. By post mortem evaluation of such haemorrhage in detail throws vital clues and information to the physician and surgeons to prevent such catastrophe in future patients. And the brief findings are highest number of victims were in the age group of 21- 50 years, with the highest peak of mean ASDH volume of 104.83 ml observed in between 71-80 years of age, diffuse nature of ASDH was seen mostly i.e. in 67.33%, frequently over frontal and parietal areas, fluid form of blood is most cases and SDH was most commonly associated with Subarachnoid haemorrhage (24.7%). The meticulous efforts are being made to study the subdural haemorrhage in all its aspects; still it needs more and more interdepartmental research, understanding and correlation for the betterment of the patients and the society at large.

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Development of the Clinical Forensic Medicine Program All Over the India: Need of Time

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Abstract

Clinical Forensic Medicine is the application of forensic medical techniques to living. To address the unmet forensic needs of victims who are survivors of violent crimes and trauma there is urgent need of examination of victims of violence by a *specially trained person* in medico-legal matters i.e. clinical forensic physicians. In this program, the clinical forensic physicians will evaluate adult and pediatric victims of blunt and penetrating trauma, sexual and physical abuse and collect evidentiary material when indicated. In this paper the importance of clinical forensic medicine program and recommendations given by the "Survey Committee Report on Medico-Legal Practices in India 1964" regarding its implementation are presented.

Keywords: Clinical forensic medicine; Victims of violence; Forensic physicians; Survey committee report.

Introduction

Forensic medicine is the medical specialty that is practiced at the interface with the law. It involves the assessment and interpretation (of findings) in an individual who has become involved either as a suspect or victim in some form of alleged criminal action. In practice however, the role of practitioners of forensic medicine has widened to include civil jurisdictions and matters of medical ethics.

The term forensic medicine is often used as an "umbrella terminology" to mean forensic pathology and clinical forensic medicine. The Clinical Forensic Medicine is the practice of assessing the physical condition of the living who allege that they are victims of an assault or examining the alleged perpetrator of the

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offence. It may cover a wide field of subjects including forensic pharmacology, criminology and traffic medicine.[1] The term 'forensic physician' is increasingly used for doctors engaged in the non-pathological aspects of forensic medicine.[2] To address the un-met forensic needs of victims who are survivors of violent crimes and trauma there is urgent need of examination of victims of violence by a *specially trained person* in medico-legal matters i.e. clinical forensic physicians.

Clinical forensic medicine is the application of forensic medical techniques to living patients. In emergency department, these techniques include the evaluation and documentation of traumatic injuries and the collection of evidentiary material for possible medico-legal presentation.[3]

Need of this program

 This Clinical Forensic Medicine Program will address the unmet forensic needs of patients who are survivors of violent injury and trauma and those patients who have not yet succumbed to mortal injuries.[4,5,6,7]

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Trauma victims present regularly to

emergency department in need of acute care.

- Currently physicians and residents, principally from the specialities of emergency medicine, pediatrics, surgery and gynecology, are performing clinical forensic examinations. These physicians generally have little or no forensic training and yet may be expected to render "expert forensic opinions".[3]
- The emergency physician is well trained to provide competent medical treatment but may be unable, uncomfortable, or unwilling to provide the patient with an equally competent forensic evaluation.[3]
- This unique forensic examination accurately documents and analyzes the patient's injuries prior at the time of intervention by other medical or surgical specialties.
- Common forensic errors of omission and commission occur with regularity in emergency departments.[5,8]
- These errors include the inadvertent failure to recognize, collect and preserve evidentiary material and an inability to accurately describe a wound's characteristics.[8]
- Interpretative errors frequently occur in the assessment of wound ballistics, bullet trajectory, and pattern injuries associated with blunt and penetrating trauma.
- These errors may deny the patient, the courts, or an accused suspect access to pertinent and critical information and evidence, which would substantiate their claims of innocence or guilt.[3]
- Clearly, the medical practitioner must have an intimate knowledge of policing, and in particular, of methods of investigating major crimes. In this regard, Clinical Forensic Medicine Program can provide better provision.
- Under Graduate, Post Graduate Education
 - Undergraduate and postgraduate education in forensic medicine is of

variable quality and quantity.

- A comprehensive list of skills and attitude recommended by Medical Council of India Regulation, 1997 desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) Graduate and postgraduate for *Forensic Medicine and Toxicology*:
 - At the end of the course, the student shall be able to make observations and logical inferences in order to initiate enquiries in criminal matters and Medico-legal problems
 - He should be able to carry on proper Medico-legal examination and documentation/reporting of injury in living cases in prescribed forms
 - He should be able to preserve relevant ancillary/biological materials for medico-legal examination
 - He should be able for estimation/ Certification of Age
 - He should be able to examine the cases of Sexual offences:
 - Examination/Certification of Victim
 - Examination/Certification of Accused
 - He should be able for Examination/Certification of Alcoholic [Prescribed Forms 'A' &'B']
 - He should be able to make Sickness Certificate, Fitness Certificate and Death Certificate
- However, as there is no Clinical Forensic Medicine Program in most of the institutes, there are significant defects in the teaching by present Forensic Medicine Department. Present teaching is only theoretical regarding this aspect, because of which the doctors are making

inadequate medico-legal examination or inadequate medicolegal report writing.

 It is hoped that implementation of Clinical Forensic Medicine Program will give an opportunity to the present staff of Forensic Medicine to teach students all clinical medicolegal aspect in an efficient way which will definitely improve the medico-legal examination and medico-legal report writing.

Services provided by this program

Implementation of the clinical forensic medicine program would provide a uniquely skilled and qualified forensic professional whose responsibilities would be:

- Medico-legal examination and medico-legal report writing of cases of:
 - Physical assault (including domestic violence, alleged assault by police, attempted murder, grievous injuries)
 - Self-inflicted injuries
 - Non-accidental injuries in children (child abuse)
 - ➢ Burn injuries
 - Road traffic victims
 - Rape and other sexual offences
 - > Fitness to be interviewed or detained
- Medico-legal assessment of alcohol or drug affected individuals particularly in the area of traffic medicine.

{In the event that the patient has been transferred from the emergency department to operating room, then an medico-legal evaluation will be undertaken in the operating suite in concern with the patient's trauma surgeons.

The clinical forensic physician will work in cooperation with the patient's treating physicians.

This is done in such a manner as will not compromise the patient's hospital care or

physical well being}

- Medico-legal assessment of allegations of child sexual abuse:
 - In this area, it is of critical importance that the practitioner has a very clear understanding of the anatomy and patho-physiology of injuries, and the interpretation of findings.
 - Most of the medical officers are inadequately trained, so they are not documenting their findings properly and they are not taking photographs.
- Making of anatomical diagrams and taking photographs of medico-legal importance as evidentiary material
- Medico-legal assessment of poisoning cases
 - Collection of all the evidentiary material for medico-legal purpose in cases of poisoning, burn, firearm injuries and other cases of medicolegal interest
- Proper labeling, sealing and forwarding all collected evidentiary material to concerned authority along with respective forms (chain of custody)
- Making summery of all the relevant information of medico-legal important points after discharge or death for giving to concerned authority
- To give certificate of 'compose mentis' while recording dying declaration
- To help clinicians in matters regarding whether particular case is to be made MLC or not (if there is any confusion regarding the same)
- Teaching of undergraduate and postgraduate students in living medicolegal cases by giving them practical demonstration
- Crime scene visit can be made as early as possible after the examination of cases by Clinical Forensic Unit

(At present as in most of the cases death is delayed Forensic Pathologist comes to

know regarding the case after a lengthy time period which makes crime scene visit not so fruitful)

- This unit will help the investigating authorities (police) to decide whether in particular medico-legal cases (i.e. admitted patient of long duration where clinicians are able to certify death) the postmortem is necessary to determine the cause of death or manner of death as per the guidelines laid down by the 174 CrPC.
- Would help to decide in medico-legal cases where organ transplantation has to be carried out or not as per the guidelines given by the Transplantation of Human organs Act.
- This unit will help in (legal) formalities in starvation or malnutrition cases
- Training of Nurses in medico-legal field (Forensic Nursing)
- *Chain of evidence:* One of the most important aspects of any case with forensic potential is the preservation of the chain of evidence, or accounting for the whereabouts of all evidence at all times, until its use by the courts. This preservation of the chain of evidence includes both proper documentation, and the securing and handling of evidence at all times. Should this be expected from a treating physician or attending nursing staff, without specific forensic knowledge or training?

Academic Activities

- The Clinical Forensic Medicine Unit will provide teaching in the areas of clinical forensic medicine to a wide variety of student groups, including undergraduates and postgraduates in Medical and its related fields, Law, Science and Criminology.
- In addition, teaching will be provided to police members and trainees, Defence Force personnel, ambulance officers, community service agencies, private

organizations and community groups.

Clinical Forensic Nursing Service (CFNS)

- It is imperative that nurses in the clinical environment be taught to recognize and preserve vital fragments of trace evidence by careful handling of the patient's clothing and other biological material in the absence of a Forensic Medicine Specialist.
- Nurses will provide forensic services in areas such as in Police and Custodial Services, forensic psychiatric services and obtaining biological samples. The success of these programs will forge new opportunities for nurses to expand their career path into other areas of clinical forensic service delivery.
- Increasingly, recruitment or access to forensic medical practitioners who can offer timely response to providing forensic services in India has become difficult. This situation is mirrored across foreign countries and has been recognized as a burning issue in these countries.
- The Clinical Forensic Medicine Unit will establish a Forensic Nurse Examiner Network if funding from the Government/ any other organization is provided. This unit will offers specialist training and clinical experience for the nurses to competently provide forensic medical examinations to victims of sexual assault and other assaults.
- Such qualified Forensic Nurse Examiners will work as a part of the larger team with Forensic Medical Officers.

Pediatric Forensic Medicine

- Pediatric Clinical Forensic medicine encompasses the areas of suspected nonaccidental injury of children, sexual abuse and physical and emotional neglect.
- > The examination of children for forensic

reasons is a specialised area in which both appropriately trained pediatricians and forensic physicians have expertise.

Such examinations are usually performed as part of a comprehensive, integrated, forensic and child health service.

Sexual and Physical Assault

- The examination of people who have been sexually assaulted is a specialised area which requires an integrated approach from a number of health professionals.
- The forensic medical assessment of physical injuries may be the only objective evidence in relation to a physical assault.
- It is vital that the injuries are documented accurately and interpreted expertly.
- Given the limited expertise in Forensic medicine of Emergency Departments and of the medical profession in general, it is preferable that forensic physicians or forensic medical officers with appropriate training conduct these services.

Survey Committee Report on Medico-Legal Practices in India 1964

The view is held that clinical forensic examinations require no special training. This attitude is basically wrong as few realize the difference between clinical forensic medicine examinations and other clinical examinations. The unfortunate result of this state of affairs is that the police are often unable to present their cases satisfactorily to the court because essential elements in the medico-legal examinations are wanting.

The successful practice of clinical forensic medicine will depend upon a re-orientation in the approach to the work on the part of the Medical Officers concerned. The re-orientation can be brought about by giving training as recommended by the Central Medico-legal Advisory Committee (Chapter V). The special features of such examinations can be emphasized and Medical Officers can be taught to appreciate the importance of such examinations.

Recommendation of Central Medico-Legal Advisory Committee

The Central Medico-legal Advisory Committee during its first session in 1956, considered the suggestion of the Ministry of Home Affairs, Government of India, to create a special cadre of medico-legal officers. The Committee then felt that the question of creating a special cadre of medico-legal officers whose exclusive field would be to undertake all medico-legal examinations was not practicable at that time. However, the Committee recommended that each State should give advance medico-legal training to at least one officer in each district and in important cities and towns and such an officer should undertake the specialised medico-legal work himself and also co-ordinate all general medico-legal work by other Government Medical Officers in his jurisdiction.

In discussing this important question and also that of the training of Medical Officers during the sixth session, the Committee recommended that every medical officer on his first appointment to Government service should receive three months training in medico-legal work under a professor of Forensic Medicine. Officers engaged in medicolegal work at the district level should receive further advanced training for six months under a Professor of Forensic Medicine. The Ministry of Health, Government of India, emphasized on the State Governments the need for training of medical officers in medicolegal work.

Status of Clinical Forensic Medicine in India

• In India at present, Clinical Forensic Medicine program where especially medico legally trained persons will evaluate the living victims of violent crimes has not been developed and implemented all over yet.

- At some places like Mumbai, there is a post of Police Surgeon.
- These Police Surgeons operate at both a forensic and a therapeutic level.
- Their forensic role entails gathering and preserving evidence; the therapeutic role involves treatment and care.
- Performing these two activities by oneperson leads to inadequacies in medicolegal examination and report writing
- Therefore, time has come to implement the proposed model by Knight[9] regarding the development of Clinical Forensic Medicine Program.

Status in other countries

- The use of forensic medical techniques on living patients is well known in Latin America, Australia, Europe, and many Asian countries.[4,6,3]
- However, prior to 1991, clinical forensic medicine had not been introduced into the graduate or post-graduate medical curriculum of American medical education.[3]
- The "Police Surgeon" in the United Kingdom and Australia is a physician who is empowered to perform forensic examinations on living patients.
- The association of Police Surgeons in Great Britain is currently involved in developing a uniform training program for police surgeons.
- The forensic pathology community within the United States has long recognized the need for a "Police Surgeon" type physician to perform examinations on living patients.[4,6,3]
- Currently in the U. S. physicians and residents, principally from the specialities of emergency medicine, pediatrics, surgery and gynecology, are performing clinical forensic examinations. These physicians generally have little or no forensic training and yet

may be expected to render "expert forensic opinions".[3]

- The concept of training emergency physicians in the application of forensic techniques was presented at the American College of Emergency Physician's Annual Meeting in Boston, October, 1991.[1]
- Only in Victoria and New South Wales are there full-time forensic clinicians.

Why Clinical Forensic Medicine has not gain recognition

- It has been previously suggested that there were following reasons why clinical forensic medicine had lagged in establishing itself as a medical speciality.[11]
- Firstly, the knowledge and skills of the discipline overlap extensively into other specialities, so that there is no clear delineation of the work of the speciality. Secondly, an academic environment ¹ has not provided support for the development of the speciality.
- Secondly, the lack of Academic Departments that have prevented the development of clinical forensic medicine as a unique discipline.

Academic Departments

- The key to the future lies in the establishment of departments of clinical forensic medicine, paralleling the other forensic medical specialties.
- There can be no compelling reason why the clinical function roles should not be fostered in the same fashion.
- The academic model will assist in producing a body of expertise; the absence of which has been a barrier to any progress in the past.[12]
- Knight[9] has previously proposed this model and it is difficult to understand why the proposal has foundered.

- Many senior police officers are supportive of such an idea. The universities may be a little more resistant but pressure must be brought to bear at the right quarter.
- If the institutions are able to facilitate relatively obscure programs then they must be able to provide a similar facility for what have been one of the most neglected areas of clinical medicine and one of substantial significance in the system of justice.
- It is easy to demonstrate that the skills of recent graduates, the knowledge of the medical population generally and that the practice of clinical forensic medicine have suffered enormously because of the absence of this process.
- The relevance of teaching and the provision of services in this area should be compelling arguments to even the most socially isolated medical faculty.
- Surprisingly, the most disappointing aspect has been the lack of impetus and pressure from the medical profession itself.
- Generally, the desire for change has not been taken up by the individuals or organizations which are providing services in this area.
- There are compelling arguments for the formation of university departments of clinical forensic medicine, or for the inclusion of clinical forensic medicine as a major area in existing department.

Discussion

- The presence of Forensic Physician or a forensically trained emergency physician within the emergency department would relive the untrained or unwilling resident or physician of many of the unwanted court appearances.
- This Forensic physician would also collect forensic evidence, which might

have otherwise been inadvertently overlooked or destroyed in the delivery of patient care.

- In addition, valuable forensic material and evidence would be documented and collected in a manner which would facilitate presentation at a later date.
- It is in the interests of victims, detainees, and the criminal justice system as a whole that a high quality, professional forensic medical service is maintained throughout the India.

Conclusion

- We can no longer watch and wait whilst others are setting agendas that are, or may be, incompatible with the future of this speciality.
- In some other countries, the deficiencies have been recognized and there are active programs in place to reverse this trend.
- There is urgency in tackling these issues.
- In Europe, themes of commonality in the teaching and practice of forensic medicine are being explored.
- In the United Kingdom, the Royal Commission into the criminal justice system is examining the very foundations of the medico-legal system.
- Worldwide, unsafe convictions and allegations of injustices are eroding confidence in the practice of the various forensic specialties.
- The time has come for us to become guardians of our own profession.
- As Pennington[13] argues, unless we are seen to be setting and maintaining professional standards then others will do so, to our detriment.
- Undoubtedly, the transition will not meet with universal approval and for many the status quo will be the preferred option.

- However, unless we can embrace a professional ethic and cause clinical forensic medicine to be established as a recognized speciality, then it will become a fragmented archival curiosity and the backwater of a larger pool.
- The only certainty is that the destiny of this speciality is very much in the hands of the current forensic persons.
- The question that remains is whether we have the desire or motivation to bring about the changes required to help the society, and to ensure the future and proper recognition of this speciality.
- If this program is implemented, it would provide the core for the development of a high quality medico-legal service.

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Standard journal article

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Corporate (collective) author

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[9] National Statistics Online – Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ 20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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