From the Desk of Editor-in-Chief

The editorial team is thankful to the experts related to the subject of forensic medicine and its allied fields for contributing scientific articles to this journal and places on record its appreciation for overwhelmingly response being shown by ever increasing list of the contributors.

The journal in the 13th year of publication is now covered by Elsevier products (Scopus) and cited with Copernicus and many other citing bodies notably safetylit, worldcat library, J-Gate & WHO Hinary and now included in Med-Ind and DOAJ with online availability at www.pafmat.com and indianjournals.com.

I am thankful to Dr Anil Garg, Joint-Editor for his support for the successful release of this issue of the journal and the members of Punjab Academy of Forensic Medicine & Toxicology for giving us the chance to serve the Academy as editors and for their time to time suggestions for making each issue better than the earlier ones.

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Violence is the intentional use of physical force or power, threatened or actual, against a person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.

Globally, violence takes the lives of more than 1.5 million people annually; just over 50% due to suicide, some 35% due to homicide, and just over 12% as a direct result of war or some other form of conflict. For each single death due to violence, there are dozens of hospitalizations, hundreds of emergency department visits, and thousands of doctors’ appointments. Furthermore, violence often has lifelong consequences for victims physical and mental health and social functioning and can slow economic and social development.

Unfortunately everyday world is spending 24, 500 Crores of rupees on arms race while 20000 children die of hunger daily world over. World is facing Gun Violence Pandemic. Amongst the developed world, America has the highest gun related killings and maximum number of guns estimated at 300 million i.e. one gun and two dozen bullets for every American. On the other hand Japan is rated with zero gun related crime- most peaceful country in the world. One can conclude more guns means more killings and not more safety as gun lobbies would like us to believe. Global arms sale is a booming business but gun violence is taking one life every minute around the world, a disgrace as stated by UN Secretary General Ban Ki-moon.

In countries with high levels of violence, economic growth can be slowed down, personal and collective security eroded, and social development impeded. Families edging out of poverty and investing in schooling their sons and daughters can be ruined through the violent death or severe disability of the main breadwinner.

Violence, however, is preventable. Scientific research shows that strategies addressing the underlying causes of violence can be effective in preventing it. Some examples of scientifically credible strategies to prevent violence include parenting education to prevent child maltreatment; life skills training for children ages 6–18 years; school-based programmes to address gender norms and attitudes; reducing alcohol availability and misuse through enactment and enforcement of liquor licensing laws, taxation and pricing; reducing access to guns and knives; and promoting gender equality by, for instance, supporting the economic empowerment of women.

The criminal justice approach sees its main task as enforcing laws that proscribe violence and ensuring that “justice is done”. The notions of individual blame, responsibility, guilt, and culpability are central to criminal justice’s approach to violence and one of the criminal justice system’s main tasks is to “do justice”, i.e. to ensure that offenders are properly identified, that the degree of their guilt is as accurately ascertained as possible, and that they are punished appropriately. To prevent and respond to violence, the criminal justice approach relies primarily on deterrence, incarceration and the punishment and rehabilitation of perpetrators.

In recent decades in many countries in the world, the criminal justice system has taken an increasing interest in preventing violence before it occurs. For instance, much of community and problem-oriented policing aims to reduce crime and violence by altering the conditions that foster it - and not to increase the number of arrests. Indeed, some police leaders have gone so far as to say the police should primarily be a crime prevention agency.
The global public health response to interpersonal violence began in earnest in the mid-1990s. In 1996, the World Health Assembly adopted Resolution which declared violence "a leading worldwide public health problem" and requested that the World Health Organization (WHO) initiate public health activities to document and characterize the burden of violence, assess the effectiveness of programmers, with particular attention to women and children and community-based initiatives, and promote activities to tackle the problem at the international and national levels.

Emerging proactive role of World Health Organization, criminal justice system and modern policing in prevention of crime and violence before its occurrence, has the direct bearing on forensic scientists to think on very similar lines. The application of principles and practice of medical and paramedical sciences for the purpose of administration of criminal justice needs to be extended to prevention of crime and violence by the forensic experts as part of their social and ethical duties and responsibilities. It is an urgent need to divert expenditure from arms race to health, education and development and the forensic experts may join ongoing campaign for the abolition of nuclear weapons, check on proliferation of small arms, confidence building measures among nations through people to people relations so that wasteful expenditure on arms race is diverted to the welfare of mankind.

Dr. D. S. Bhullar
Editor in chief, JPAFMAT

This article can be sited as:
Bhullar DS: Violence free Society, Nuclear Disarmament and Forensic Experts for Peace
A STATISTICAL ANALYSIS OF ALLEGED VICTIMS OF SEXUAL ASSAULT
A RETROSPECTIVE STUDY

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Abstract
Sexual offence has always been a part of human culture, and women are the victims in most of the time causing both physical and mental injury to the lady. Sex-violence needs justice for protection and preservation of dignity of a female. The aim of the study was to know the different aspects of the sexual assault in and around Guwahati, Assam, the Gateway to North Eastern region.

This study includes a total of 382 cases that shows female victims of 98.43% outnumbering the male victims (sodomy). This study also revealed that the commonest age group was to be 11-20 years with a 55.76% of total cases while 30.37% cases were occurred in the last quarter of the year. However this study still needs a very systematic through analysis using modern tools with the involvement of a multidisciplinary team for evaluation of a good outcome, etc.

Introduction
Sex related offences are universal phenomena, which are taking place in every society. Sexual offences aptly take the form of sexual violence, which sometimes cause severe and irreparable damage to the physical and mental health of the victims. Its impact on mental health can be equally being serious as that of physical injury. Sexual offences, when they assume the form of sexual violence may lead to murder, suicide, and acute depression of victims. Sex-violence needs justice for protection and preservation of dignity of a female. With the introduction of penal law in India, irrespective of sex, right of equality are provided to both male and female, although the discrimination in terms of sexual offences is still there with female outnumbering the male victims.

In 2002 the WHO defines sexual violence as: any sexual act, attempt to obtain an act, unwanted sexual comments or advances, or acts to traffic, or otherwise directed against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work [1]. The incidence of sexual violence against women is increasing worldwide and the global statistics are shocking.

Worldwide about 20% of women have been sexually abused in their childhood [2]. A high rate of sexual assault is found in other Asian countries as well. In Japan 60% of women suffer sexual violence [3] while 25% of women in India [4] and 53-62% of women in Bangladesh and 19% in North Carolina, United States [5] are victimized at times.

Sexual offence cab be defined as sexual intercourse or sex-related acts performed in a way which is against the provision of the law of the land [6].

Sexual assault is an assault of a sexual nature on another person, or any sexual act committed without consent. Although sexual assaults most frequently are by a man on a woman, it may involve any combination of two or more men, women and children [7].
Aims and Objectives
The aim of our study was to ascertain sexual violence in and around Guwahati city and to analyze the data with respect to epidemiological and demographics presentation, relationship between victim and accused, time of reporting of cases, pattern of physical injuries and evidence collection from victims of sexual violence.

Materials and Methods
This retrospective study was conducted on all the alleged sexual assault victims came to the department of Forensic Medicine, Guwahati Medical College, Guwahati, Assam for medical examination during the year 2010 from 1st of January to 31st of December. This study is based on the sexual assault victim cases brought to the department for medical examination from the Kamrup district and also few referred cases from the nearby districts.

As the study is a retrospective one, data those were collected previously are assembled and tabulated. Victims those who refused medical examination are not included in this study.

Observations
Sex of the victims: A total of 382 cases are included in this study. Out of all the victims, 98.43% (376 cases) were female.
Marital status of victims: Most of the victims (61%) were unmarried. We also found 2% widows in our study.
Religion of victim: Majority of the victims were Hindus (277).
Commonest age group of the victims was 11-20 years with 55.76% of cases (Figure 1).

Month wise distribution of cases: maximum number of cases occurred during the month of October, followed by November (Table 1).

<table>
<thead>
<tr>
<th>Month</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>26</td>
</tr>
<tr>
<td>February</td>
<td>21</td>
</tr>
<tr>
<td>March</td>
<td>30</td>
</tr>
<tr>
<td>April</td>
<td>39</td>
</tr>
<tr>
<td>May</td>
<td>20</td>
</tr>
<tr>
<td>June</td>
<td>38</td>
</tr>
<tr>
<td>July</td>
<td>36</td>
</tr>
<tr>
<td>August</td>
<td>27</td>
</tr>
<tr>
<td>September</td>
<td>29</td>
</tr>
<tr>
<td>October</td>
<td>41</td>
</tr>
<tr>
<td>November</td>
<td>40</td>
</tr>
<tr>
<td>December</td>
<td>35</td>
</tr>
</tbody>
</table>

Educational status of victims: most of the victims were from low educational strata, and maximum of them were studied up to high school level (Table 2).

Victim offender relationship: boyfriend was the commonest offender followed by the husband. We recorded only fourteen (14) incest cases in our study (Table 3).

<table>
<thead>
<tr>
<th>Educational status</th>
<th>No of victims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>46</td>
</tr>
<tr>
<td>Not going to school</td>
<td>2</td>
</tr>
<tr>
<td>KG student</td>
<td>3</td>
</tr>
<tr>
<td>Primary Student</td>
<td>30</td>
</tr>
<tr>
<td>Primary Pass</td>
<td>66</td>
</tr>
<tr>
<td>High school Student</td>
<td>76</td>
</tr>
<tr>
<td>Left at High School Level</td>
<td>39</td>
</tr>
<tr>
<td>10th Pass</td>
<td>12</td>
</tr>
<tr>
<td>HS Student</td>
<td>54</td>
</tr>
<tr>
<td>HS Pass</td>
<td>17</td>
</tr>
<tr>
<td>Degree Student</td>
<td>32</td>
</tr>
<tr>
<td>Graduate</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 1 Age group wise distribution of victims
Offender | No of victims
---|---
Boy friend | 111
Co-worker | 2
Driver | 1
Father | 2
Step-father | 3
Friend | 31
House owner | 3
Husband | 73
Neighbor | 30
Close Relative | 15
Unknown | 78
No Sexual intercourse | 33

Age of menarche of the victims: most of the girls attained menarche at the age of twelve (88) and thirteen (91) (Table 4).

<table>
<thead>
<tr>
<th>Age at Menarche</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nine</td>
<td>3</td>
</tr>
<tr>
<td>Ten</td>
<td>20</td>
</tr>
<tr>
<td>Eleven</td>
<td>54</td>
</tr>
<tr>
<td>Twelve</td>
<td>88</td>
</tr>
<tr>
<td>Thirteen</td>
<td>91</td>
</tr>
<tr>
<td>Fourteen</td>
<td>38</td>
</tr>
<tr>
<td>Fifteen</td>
<td>30</td>
</tr>
<tr>
<td>Sixteen</td>
<td>11</td>
</tr>
<tr>
<td>Seventeen</td>
<td>2</td>
</tr>
<tr>
<td>Cannot</td>
<td>3</td>
</tr>
<tr>
<td>Remember</td>
<td>36</td>
</tr>
<tr>
<td>Not attained</td>
<td>36</td>
</tr>
</tbody>
</table>

Occupation of the victims: maximum numbers of the victims were students (Figure 2).

Time interval between incidence and medical examination: only 23% of the cases reported within 3 days of the incident for medical examination (Table 5).

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 hours</td>
<td>6</td>
<td>2%</td>
</tr>
<tr>
<td>6-15 hours</td>
<td>11</td>
<td>3%</td>
</tr>
<tr>
<td>16-24 hours</td>
<td>26</td>
<td>7%</td>
</tr>
<tr>
<td>1-3 days</td>
<td>44</td>
<td>11%</td>
</tr>
<tr>
<td>3-7 days</td>
<td>131</td>
<td>34%</td>
</tr>
<tr>
<td>7-15 days</td>
<td>71</td>
<td>19%</td>
</tr>
<tr>
<td>16-30 days</td>
<td>32</td>
<td>8%</td>
</tr>
<tr>
<td>&gt; 1 month</td>
<td>28</td>
<td>7%</td>
</tr>
<tr>
<td>No sexual intercourse</td>
<td>33</td>
<td>9%</td>
</tr>
</tbody>
</table>

Place of incidence: rented house was the commonest place of sexual intercourse, as the victim girls eloved with the boyfriend and strated to live seperately at a distant place (Figure 3).

Figure 3 Place of sexual intercourse (SI-sexual intercourse)

Other associated features: a total of 19 cases were reported with pregnancy at the time of examination. One case showed features of intersex (Figure 4).

Hymenal tear: a large numbers of cases (277+51=328) reported with old tears in the hymen; because most cases were reported...
late, or false allegation or they were habituated to sexual intercourse. Only 19 cases showed recent tears in the hymen (Table 6).

Table 6 Status of hymenal tears

<table>
<thead>
<tr>
<th>Status of Hymen</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carunculæ formation</td>
<td>51</td>
</tr>
<tr>
<td>Incomplete tear</td>
<td>2</td>
</tr>
<tr>
<td>Old tear</td>
<td>277</td>
</tr>
<tr>
<td>Old tear with</td>
<td>4</td>
</tr>
<tr>
<td>Tenderness</td>
<td>25</td>
</tr>
<tr>
<td>Recent tear</td>
<td>19</td>
</tr>
</tbody>
</table>

Position of Hymenal Tear: six o’clock and three o’clock were the commonest sites of hymenal tear, which indicates that sexual intercourse might be the cause of hymenal tear.

Discussion

Sex related cases are increasing day by day in our country, reflecting the Western influence in our society. Sexual violence is one of the most common crimes against women and its data usually comes from police, clinical settings, NGOs and surveys. The relationship between these sources and global magnitude of the problem corresponds to tip of an iceberg. The number of cases of sexual violence could be higher because many victims do not report for the reason that they are ashamed embarrassed or fear of being blamed [1].

Assam along with Andhra Pradesh, Bihar and Delhi show the highest percentage of sexual abuse among both boys and girls, as well as the highest incidence of sexual abuse8. National Crime Records Bureau (NCRB), 2010 reported that 1721 rape and 2767 kidnapping cases were registered in 2010 in Assam, which was 7.8% and 9.3% respectively of all cases registered in India during that year. NCRB, 2010 also reported that offender in 1204 (69.96%) cases, out of 1721 rape cases, was a known person to the victim.

In our study, male cases accounted for approximately 2% and almost 10% of the victims were below ten years of age. 55.76% cases were from the age group of 11-20 years. These results are in agreement with Hasan et al [9], Sarkar et al [10], Bhardwaj et al [11], Roychoudhury et al [12] and a study conducted by Islam [13]. In a study done by Sharma, Aggarwal, and Bhullar, it was observed that the incidence of alleged rape is most amongst girls of 15-18 years [14]. Sukul et al observed the maximum number of natural sexual offences were from the age group of 18-30 years [15]. Adolescent victims were the most common (76.9%) in the study of Malhotra [16]. Bhowmik and Chaliha found 18-20 years as the most common age group involved [17].

Sukul et al [15] and Bhowmik et al [17] observed respectively that 77% and 66.93% victims were unmarried. Similarly we found in our study that unmarried cases were accounted for 63% of the cases, we found 6 widow cases. Parveen in his study in Faisalabad city, Pakistan found the same result of 63% unmarried victims [18]. Developed countries no longer document the marital status of victims of sexual violence because it is acceptable in their society for sexual contact to take place within as well as outside of marriage.

In the present study, we observed that most of the cases were occurred during the months of October, November and April, which suggested that during the festive seasons (Rongali Bihu in April and Durga Puja/Diwali during October and November) mature females eloped with their boyfriend which resulted in more number of sexual assault cases during that period. This is in contrary to the Statistics of sexual assaults in the Republic of Ireland for 2004-05 which showed maximum incidence during the summer months of June to August [19], so as the Sukul et al [15].

Male victims were only 2%, which is in accordance to the study of Bhowmik et al [17] (1.06%). All the male victims were reported with alleged anal intercourse. Sadock mentioned that the most common act in male rape is anal penetration of the victim, followed by forcing the victim to perform fellatio [20]. Indian law does not consider sexual assault of a boy as male rape, rather than considering it as unnatural sexual assault.

In our study significant relationship was present between the victim and the perpetrator. In about 77% of the perpetrators
were known to the victim. This is in accordance with the data from India, Portugal, Malaysia, South Africa and Uganda [10, 12, 21-24] in which approximately 2 out of every 3 sexually violent acts are carried out by someone known to the victim. Thus the study disproves the myth “strangers usually commit sexual violence”.

This study shows that the commonest age at menarche is thirteen years followed by twelve. Ninety-one cases attained menarche at the age thirteen years and 88 cases attained at the age of twelve. Bagga and Kulkarni in their study found that out of 366 cases, majority (68%) attained menarche between the age of twelve years and fourteen years [25]. In our study, almost 58% cases attained menarche in between twelve and fourteen years of age.

We in our study found that only 23% cases reported early (within three days of incidence) for medical examination. The reason being consented act of sexual intercourse over a period of time followed by refusal to marry by the boy-friend. Failure in mutual settlement between both the parties further delayed the lodgment of complaint, and so thus the medical examination. Sukul, Chattopadhayay and Bose [15] in their study at Bankura Sammilani Medical College found that 86.2% cases reported late for medical examination. In contrary to this, Santos et al found that 61% cases reported for medical examination within 72 hours of incident and findings in the genitalia and/or anus was present in 31% cases [26].

Motility of spermatozoa is maintained for 1-6 hours after ejaculation into the vagina. Few motile sperm can be seen after 6 hours, but the persistence of motility is very variable depending upon the time in the menstrual cycle and full effects of hormonal preparations like the contraceptive pills upon sperm motility. After motility has been ceased, spermatozoa remain intact for as long as 48 hours, and they then separate into heads and tails. In the living, identifiable portions of spermatozoa can be seen for up to four days after ejaculation into the vagina [7]. So delayed reporting of cases reduces the chance of getting positive result to very minimal. Only in 5% cases recent hymenal tear was detected, and in another 6.65% cases hymen was found to be intact. Sukul et al [15] found 6.9% cases of recent hymenal tear and 6.9% cases of intact hymen. Sarkar et al10 reported hymen rupture in 85% cases, majority of which were old tears. Islam found hymenal tears in 38.9% cases with fresh tears in the fourchette in 2.6% cases. Grossin in his study found hymenal lesions only in 11% cases [27]. Bhowmik et al [27] found 8.88% cases of intact hymen and 1.97% cases of recent tears of the hymen.

The present study showed that 5% cases were pregnant at the time of examination. Sukul et al [15] found that 16.09% cases became pregnant following the act of sexual intercourse and had aborted or were pregnant at the time of examination. Boonma M in his study reported that 3.2% cases were pregnant at the time of examination [28].

Conclusion
In our study we found that most of the girls had voluntary sexual intercourse with their boy-friends and eventually eloped with them. Later on cases were filed by their parents or guardians who did not approve to this relationship. At times the boy-friend gave false assurance to the girl to marry her and did sexual intercourse frequently with her; on refusal the victim girl herself lodged complaint against the boy. So the question arises how authentic were those allegations. These false cases are not only an un-necessary burden to the legal machinery and health care personals, but also cause defamation and false criminal charges against an innocent man. Of course, there are also true rape cases and cases where girls were enticed to marriage by man under a false name and religion or even a married man pretended him as an unmarried person.

In majority of the cases there was no evidence of forceful sexual intercourse at the time of examination due to long time interval between the act and medical examination. Delayed reporting of cases resulted in loss of vital trace evidences. So prompt reporting and early examination of cases, are of vital importance. All concerned for this purpose should be properly trained for prompt reporting starting from the victim to the legal authority.

Many research studies have confirmed that simply the enactment of
special laws will not serve the purpose unless laws are strictly implemented. The task cannot be accomplished only by the police alone but has to be shared by all the other wings of the criminal justice system. Particularly, the judiciary has to take it upon itself to see that no perpetrator of these crimes goes unpunished. Along with the criminal justice functionaries, nongovernmental organizations, media people, political leaders, social workers and even the common man have to coordinate to create an environment in which sexual violence against women and children will not proliferate. Multidisciplinary approach encompassing emotional, medical and forensic care is required in such cases [20]. What is most important is that the general attitude of society needs to be changed in favour of the dignity of women and children which would necessitate large scale literacy among women folk and the economic improvement of the downtrodden masses.

The primary prevention of sexual violence, targeting both women and men, interventions supporting the victims of sexual assault, measures to make it more likely that perpetrators of rape will be caught and punished and strategies for changing social norms and raising the status of women. Health professionals have a large role to play in supporting victims of sexual assault medically and psychologically - and collecting evidence to assist prosecutions. Ultimately, the strong commitment and involvement of governments and civil society, along with a coordinated response across a range of sectors, are required to end sexual violence against women and children.

Conflict of Interest
None Declared

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This article can be cited as:
COMPARISON OF BODY HEIGHT AND FOOT LENGTH IN STUDENTS OF PGIMS ROHTAK IN HARYANA.

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Malik AK, Resident, *
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Abstract

Foot length and body height have a direct relation with each other, although the exact calculation of this relation cannot be determined with precision. This relation between foot length and body height has been questioned time and again. In an attempt to put down such speculations scientific researchers and medical professionals all over the world have been studied, the results of one such study done in PGIMS Rohtak is presented. It may not only help us to predict one from the other but also whether the relationship between the two is significant or not.

Keywords: Anthropometry, Correlation, Foot length, Total body height.

Introduction

Body growth is a vital process and is measured by measuring the height of a person, which itself is a sum of the length of certain bones and appendages of the body. It represents certain relationship in form of proportions to the total stature. This relationship is useful anthropologically to find racial differences and also medico-legally when only parts of the deceased body are available.

Height estimation by measurement of various long bones has been attempted by several workers with variable degree of success. Each worker has derived his own formula for calculating the stature from long bones. However, foot measurement has not frequently been used for this.

Review of literature

It was Rutishauser in 1968 that for the first time showed that reliability of prediction of height from foot length was as high as that from long bones [1]. Sen and Ghosh in 2008 established the relationship between stature and feet dimensions among Rajbanshi male and females of North Bengal on a sample of 350 adult Rajbanshi and 100 adult Meche individuals of 18-50 years residing in different villages located in the Darjeeling district of West Bengal. Stature, foot length and foot breadth were positively and significantly correlated to each other and among these foot breadth was found to be more accurate in estimating stature [2].

Ossification and maturation in the foot occurs earlier than the long bones and therefore height could be more accurately predicted from foot measurement as compared to that from long bones during adolescence age. Hence, an effort has been made to find out the correlation between foot length and body height in population of Haryana.

Material & Method

For present study, total 145 (80 male and 65 female) asymptomatic, healthy medical students belonging to various regions of Haryana were selected. Their age ranged between 18 to 25 years. The study was...
conducted from January to March 2013 in Department Of Forensic Medicine, PGIMS, Rohtak.

The left foot was selected for measurement as per recommendation of the international agreement for paired measurements at Geneva in 1912. Foot length was measured as a direct distance from the most prominent point of the back of the heel to the tip of the hallux or to the tip of second toe, when the second toe was larger than hallux by spreading calliper. Height of the individual was measured in standing erect anatomical position with standing height measuring instrument. The measurements were taken at a fixed time between 2.00 to 4.30 p.m. to eliminate diurnal variation and by the same person to avoid personal error in methodology.

Discussion

The present study is based on the measurements of foot length and body height of total 145 students aged between 18 to 25 years of age. Obtained data was analysed and an attempt was made to find out correlation and to derive a regression formula between body height and foot length of an individual. Charnalia in 1961 showed the significant correlation between height and foot length [3]. Regarding the estimation of height from foot length Qamra et al in 1979 derived a regression equation between foot length and height in North West India population. There correlation coefficient between foot length and height was +0.69 in male and +0.70 in female [4]. In a study in Gujarat by Patel et al the correlation coefficient between height and foot length was + 0.65 in male and + 0.80 in female [5]. Krishan in 2008 examined the relationship of stature to foot size of 1040 adult male Gujjars of North India aged between 18 to 30 years and the highest correlation coefficient were shown by the toe length measurements (0.79-0.86) [6].

No such type of study was carried out in Haryana. In the presence study the formula is derived as under.

In the present study also, as mentioned above a good correlation of body height was observed with foot length and it was highly statistically significant with statistical significance of 0.001 in males and 0.002 in females.

The correlation coefficient between height and foot length is + 0.36 in male and + 0.37 in female which is highly significant. It means there is a strong bond between height and foot length and if either of the measurement (foot length or total height) is known, the other can be calculated and this would be useful for Anthropologists and Forensic Medicine experts.

However, one has to be careful because these results and the regression equations in particular can only be applied to the population from which the data have been obtained. When means of foot measurements were compared with other studies [2, 7, 8], differences were found between the populations.

Observations & Result

Table below shows various important parameters in the present study conducted in PGIMS Rohtak. The correlation coefficient between height and foot length is positive (0.36 in males and 0.37 in females), suggesting that it is significant.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number</td>
<td>80</td>
<td>65</td>
</tr>
<tr>
<td>Mean height (cm)</td>
<td>172.75</td>
<td>159.10</td>
</tr>
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Regression Equation

For Male: \( H = 111.93 + 0.37x FL \)
For Female: \( H = 76.44 + 0.14xFL \)
Where \( H \) = Total height
\( FL \) = Foot length

From a physiological standpoint, it also makes a sense that taller people need
longer feet to support a longer body and for increased balance. Foot size and height are both based on many factors such as gender, genetics, health and environment. Some of these factors are subject to change due to genetic abnormalities, disability, poor nutrition and hormonal imbalances and these variables can affect the relation of height to foot size.

Conclusion
The average mean foot length in male and female in all age groups from 17 years to 25 years is 25.27 cm and 23.62 cm respectively. Height of individual male is 6.83 and female is 6.73 times the length of his/her foot length. The estimation of height from various long bones, head length and hand length has been attempted by many workers. However, foot dimensions have not frequently been used for this. The present study deals with the observations on correlation of total standing height with foot length in students of Haryana.

The results of the present study show that foot and footprint dimensions can be used as predictive values for stature estimation in forensic and medical investigations. With this findings it is clear that by the measurement of either any (foot length or total height) the other can be calculated and this fact may be of practically use in Medico legal cases (M.L.C.) investigations. Thus the results of the present study will provide useful information to various Anthropologists and Forensic Medicine Experts.

Conflict of Interest
None Declared

References


This article can be cited as:
HISTOPATHOLOGICAL STUDY OF BLOOD VESSELS IN HANGING AND STRANGULATION DEATHS

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Article history
Received Feb 12, 2013
Recd. in revised form May 12, 2013
Accepted on May 12, 2013
Available online June 25, 2013

Abstract
The present study was done on medicolegal autopsies conducted by the Department of Forensic Medicine and Toxicology, Government Medical College, Amritsar from 1.3.2001 to 31.1.2003 to study the histopathological changes in neck structures. Tissue biopsy from the blood vessels, the internal carotids of the neck beneath and around the compression area of ligature mark was taken and histopathological examination was carried out. In 28% cases of hanging and 5.5% cases of strangulation combined findings of intimal tearing and medial tearing were found, whereas in 4% of hanging and 5.5% cases in strangulation, tearing of the layers was associated with infiltration in the vessel wall.

Keywords: hanging, strangulation, intimal tearing, medial tearing, infiltration

INTRODUCTION
A number of anatomical and physiological factors in varying permutations and combinations usually operate in bringing death and asphyxia is not the sole element involved [1] in hanging and strangulation deaths. The local external features comprise marks of a ligature or constricting fingers. The internal findings include bruising in the soft tissues, injuries to blood vessels and congested lymph nodes of the neck. The solid structures of neck like hyoid and larynx are also damaged in some cases [2]. Only a few [3, 4] have conducted the histopathology studies of the neck tissue in such deaths to confirm the type and cause of death. The present Histopathological study of the traumatized/affected tissue and other neck structures (soft tissues) will help in distinguishing the ante-mortem and postmortem aspects and add impetus in making the circumstances and cause of death in violent asphyxia more lucid.

MATERIAL AND METHODS
The present study is done on medicolegal autopsies conducted by the Department of Forensic Medicine and Toxicology, Government Medical College, Amritsar from 1.3.2001 to 31.1.2003 to study the histopathological changes in neck structures.

Dissection technique: The skull and the chest cavity were opened prior to the detailed dissection of the neck. It provides a comparatively clearer field for the study of neck structures and avoids congestive artefactual haemorrhages in the neck structures as cautioned by Prinsloo and Gordon [5].

Tissue biopsy from 4 sites, viz; skin and subcutaneous tissue under and adjacent to the ligature mark, muscles underlying the ligature, main blood vessels of the neck and the lymph nodes of the neck was taken.

Preliminary data were recorded and various tissues under study were examined for their gross appearance. Histopathological examination was carried out as described by Culling et al [6].

OBSERVATIONS
The present study of histopathological changes of trauma to the
neck in hanging and strangulation cases was done in Department of Forensic Medicine and Toxicology attached to Govt. Medical College, Amritsar w.e.f. 1.3.2001 to 31.1.2003 during which period 1983 cases were brought for postmortem examination and out of which 45 (2.26%) cases were studied.

Tearing of the intima alone was present in 5 (20%) cases of hanging and 1 (5.55%) case of strangulation. Tearing of the media alone was present in 1 (5.55%) case of strangulation. Tearing of the adventitia alone was present in 1 (5.55%) case of strangulation.

Tearing of the intima and media was seen in 7 (28%) cases of hanging and 1 (5.55%) case of strangulation (Fig 1).

Intimal tearing associated with adventitial tearing was present in 3 (12%) cases of hanging and none in strangulation. Tearing of all layers was present in 5 (20%) cases of hanging and 10 (55.5%) cases of strangulation.

Tearing of the media associated with adventitia tearing was seen in 2 (8%) cases of hanging and none in strangulation. Tearing of the adventitia associated with infiltration was seen in 1 (5.55%) case of strangulation (Fig 2).

Tearing of the media and adventitia associated with infiltration was present in 1 (4%) case of hanging and 1 (5.55%) case of strangulation. Tearing of all layers of the blood vessels associated with infiltration was seen in 1 (4%) case of hanging and 1 (5.55%) case of strangulation. In 1 (4%) case of hanging all the features of blood vessel trauma were absent.

Discussion

The present study comprised of 45 autopsy cases of post-mortem examination, brought to the mortuary wing of the Department of Forensic Medicine and Toxicology, Government Medical College, Amritsar w.e.f. Mar. 2001 to Jan. 2003 out of which 43 cases were declared as deaths due to hanging and strangulation as per autopsy report.

The findings of tearing of intima, media or adventitia alone or along with infiltration in the carotid blood vessel wall were observed more in frequency in strangulation deaths compared to the hanging deaths (Table I).

In 28% cases of hanging and 5.5% cases of strangulation combined findings of intimal and medial tearing were found, whereas in 4% of hanging and 5.5% cases in strangulation, tearing of the layers was associated with infiltration in the vessel wall.

Tearing of intima alone was observed more (20%) in hanging cases but tearing associated with infiltration was not seen in any case of hanging death. This might be an autolytic change.

Tearing of adventitia with infiltration was present in 5.5% of strangulation cases but none in hanging cases. Perhaps greater relative movement between the tissues of the neck occurs due to greater relative movement between the victim and the assailant, who is using the ligature material.

Tearing of all the layers was seen more (55.5%) in strangulation cases than in hanging cases (20%). This again substantiates the point that more violence is met within strangulation cases.

In 4% hanging deaths, no feature of carotid blood vessel trauma i.e. tearing of layers and/or infiltration was observed but in all strangulation cases one or the other feature was observed. These might be the
cases of partial hanging in which trauma to underlying tissues is quite less than in cases of complete hanging. The reason for this is that in partial hanging the body is touching the ground and there is less stretching of the carotid blood vessels. However in complete hanging, the total body weight is pressing upon the neck structures.

The various features of the hanging and strangulation deaths that are available from the history of the case, police investigation, gross findings and autopsy findings lead a forensic pathologist to the conclusion of compression of the neck and in majority of cases distinction between antemortem and postmortem aspects can be clearly made out. However, borderline cases that test the mettle of forensic pathologist do always exist. Though the present study will be of great help in establishing the cause of death from the histopathological studies of the soft tissues of the neck as well as antemortem v/s postmortem aspects of such cases yet further studies are required to be done to elucidate completely whether the compression of neck is responsible or not in causing the death.

Conflict of Interest

None Declared

References


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A STUDY OF VERTEBRAL SYNOSTOSIS AND ITS CLINICAL SIGNIFICANCE

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Abstract
Knowledge about any deviation from the normal anatomy of our vertebral column is very essential especially for an orthopedician, forensic pathologist, neurologist and clinical anatomist for diagnosing the patients with such vertebral anomalies. Any congenital or acquired abnormality in the vertebrae may be either asymptomatic or a cause of discomfort and inability to carry out various day to day activities because of the important structures related to them. Fusion between the adjoining vertebrae may limit our movements especially in lumbar and cervical regions. This deviation is also helpful in identification of the individuals and is important for forensic medicine experts to know in certain situations. The present study was conducted on 48 adult dried vertebral columns to know the incidence of vertebral fusion in different regions; any associated structural abnormality, which might be a cause of neural or vascular symptoms. The incidence of fusion was seen maximum in lumbosacral region (10.46%), then in cervical, thoracic and lumbar regions in decreasing order. The causes could be congenital (failure of re-segmentation of somitomeres) or acquired thereby determining the extent of fusion between different parts of vertebrae involved in fusion.

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Keywords: Identification; vertebral synostosis; vertebral anomalies

Introduction
The spinal column is the central structure in the vertebrate body which provides stability, posture and initiates all the movements. Formation of spine during embryonic life is a highly complex and regulated process. If disrupted, can lead to a variety of congenital anomalies including block vertebra, hemivertebra etc [1]. Abnormal fusion of vertebrae in different regions of vertebral column can lead to a variety of symptoms or may be asymptomatic depending upon the degree of compression exerted by such fused vertebrae on adjoining structures like nerves, blood vessels or spinal cord. Previous authors [2] named the fusion of vertebrae as Klippel Feil syndrome in cervical region, synspondylism in thoracic region or block vertebra in lumbar region.

The fusion may be congenital due to failure of segmentation of sclerotomes at certain levels or may be acquired due to a number of other causes like tuberculosis, juvenile rheumatoid arthritis or trauma etc. Congenital anomalies like Klippel feil syndrome, fetal alcohol syndrome are associated with vertebral fusion. 75% of
vertebral fusions occur in cervical region [3]. Congenital anterior fusion of vertebrae is usually asymptomatic. Awareness of this anomaly is important for correct diagnosis [4].

Cervical vertebral fusion if accompanied by spinal canal stenosis, needs appropriate treatment and care, to avoid any complications. Thoracic vertebrae may be fused, although less frequently as compared to cervical, due to ossification of anterior longitudinal ligaments as seen in diffuse idiopathic skeletal hyperostosis (DISH), ankylosing spondylitis, osteochondritis etc. Transitional vertebra i.e Sacralisation of last lumbar vertebra (partial or complete) may be a cause of disc bulge or herniation nine times more common at the interspace immediately above it than at any other level [5].

Material and methods
The present study was conducted on 48 dried adult vertebral columns obtained from the Anatomy department of Gian Sagar Medical College & Hospital, Ramnagar, Patiala in Punjab. The vertebrae of all the regions were studied to see if there is any abnormal fusion between contiguous vertebral bodies, pedicles, laminae, spines or transverse processes. The measurements were done with the help of digital Vernier callipers having resolution of 0.02mm Inclusion criteria- all intact adult vertebrae were included. Exclusion criteria- neonatal and broken vertebrae were excluded from the study.

Observations
Upper Cervical vertebrae were found fused in 6.25% (cases 1-3). Two Thoracic vertebrae in two thoracic spines were fused (4.16%) (Cases- 4, 5). Two lumbar vertebrae of one lumbar spine were fused (2.08%) (case - 6). Sacralisation of L5 (partial or complete) was observed in 10.41% (cases-7-11). Coccyx was fused to sacrum in 3 cases (6.25%) (cases- 12-14) Case-1 (figure-4, 5) in which C1, C2 and C3 vertebrae were fused seen as a single functional unit, with forward displacement of atlas, dens lying almost in the center of vertebral foramen, which measured 7.11mm antero-posteriorly. Lateral masses of atlas were fused with the superior articular facets of axis on both sides, bodies of 2nd and 3rd cervical vertebrae completely fused, and fusion of the left laminae of these two vertebrae. The spines and transverse processes of all the three vertebrae were separate. The facet for dens on the posterior aspect of anterior arch of atlas was also not well defined.

Case-2 was that of a block vertebra in which there was fusion between C2 &C3 with fused spines and laminae, bodies fused partially on the anterolateral aspect and completely posteriorly. Left superior articular facet of C2 showed wider and pitted surface, which overlapped the foramen transversarium of C2. Right intervertebral foramen was 7.12mm in height, but could not be measured on left side being overlapped by enlarged and uneven surfaced superior articular facet of C2 (figure-1,2,3).

Case-3 bodies of C2 and C3 were partially fused on either side, articular processes completely fused with no fusion between spines and laminae. The intervertebral foramen was 9.48mm on right side and 11.07mm on left side (figure-4, 5).

Case-4, 5 in thoracic region, out of 48 vertebral columns, 2 cases showed fusion, only of two adjoining typical vertebral bodies partially. Case-4 (figure 6) was the fusion between T2 and T3 vertebrae, whereas in case 5 the fusion was between T3 and T4 vertebrae both the cases showed fusion of their bodies only in the anterior median line, with no other part fused, maintained intervertebral disc space in both the cases.

Case-6 (figure-7, 8) in lumbar region, only two lumbar vertebrae L1 and L2 of one vertebral column were noted to have fused bodies with no fusion of vertebral arches. The bodies were completely fused with slight bulging at the level of fusion.

In lumbosacral region cases7-11 (figure-9-13), complete or partial fusion between 5th lumbar vertebra and first sacral segment of the sacrum was observed. According to classification given by Castellvi et al, 2007 [6], two out of five cases
belonged to type III-B i.e fusion of both the transverse processes with the ala of sacrum, two were type III-B, but with bodies also fused with first sacral segment. One was of type-IV i.e. mixed type with left transverse process completely fused with ala, while the right transverse process enlarged.

In cases 12-14, the coccyx was fused with the last piece of sacrum forming five pairs of sacral foramina rather than four. The sacral cornua were ending higher up at the last sacral segment.

Discussion
During development of vertebrae the re-segmentation is very important. Inappropriate vertebral fusion results in anomalous vertebral synostosis or spinal fusion [2]. The etiology of fusion may be congenital, acquired or surgical. There may be associated anomalous fusion of cervical spine in conditions like Willet- Sprengel shoulder, Brevicollis, Kyphosis, congenital deafness, renal agenesis or cardiovascular abnormalities etc [7]. Prevalence of vertebral fusion in Lithuanian population was 2.6% in cervical, 1.65% in thoracic and 0.5%in lumbar vertebrae observed by previous workers2. In the present study, the incidence was 6.25% in cervical, 4.16% in thoracic and 2.08% in lumbar regions indicating the trend of fusion remaining the same in both the studies with cervical spine involved more frequently in fusion than thoracic and lumbar.

Congenital Cervical vertebral fusion leads to decrease in length of spine, prominent trapezei, webbed neck, lowered hair line, signs of peripheral nerve compression. Previous workers [8] found the incidence of C2-C3 fusion to be 0.4-0.7%. Abnormal segmentation of sclerotomes leading to formation of block vertebra during development may be because of decreased blood supply during 3rd- 8th weeks of intrauterine life [9]. Vertebral fusion anomalies are likely to be associated with disturbance of Pax-1 gene expression in developing vertebral column 10.

In case-1 of present study, the antero-posterior diameter of vertebral foramen of atlas with fused axis and displaced dens was 7.11mm as compared to the values of AP diameter of atlas given by Gosavi and Vatsalaswamy, 2012 [11] who in their study observed it to be on an average between 25.66-27.89mm with a standard deviation of 2.59mm. With the dens almost in the center of vertebral foramen (fixed because of fusion between lateral masses of atlas and axis), narrowing it to a great extent might be a cause of neurological symptoms due to compression of spinal cord.

In case 2 of present study the intervertebral foramen height between fused C2 and C3 vertebrae was 7.12mm on right side in contrast with the observations of Lentell et al, 2002 [12] who found it to be on an average 12.2±1.3mm. Narrowing of the foramen might compress the structures passing through it leading to neurological and vascular symptoms.

According to Romanes, 1981 [13] congenital anomalies at cranio-vertebral or cervical region are common. Fusion between C2 and C3 vertebrae leads to limited movement between them and therefore C3 vertebra is given the name vertebra critica [14].

Butler 1971 [15] described the anterior bony fusion of two vertebral bodies to be a rare manifestation of Scheuermann's vertebral osteochondritis, a condition of herniation of IVD tissues through the cartilage end plate of the vertebral bodies, which later on ossifies resulting in fusion of vertebral bodies. In the present study the fusion between the thoracic vertebrae resembles that of osteochondritis with the vertebral bodies fused only anteriorly.

In the present study the incidence of sacralisation was 10.42%, the previous authors observed it to be 9.2% [16], 11.6% [17] 14% [18].Sacralisation can have a bearing on the counting of vertebral levels especially during planning of spinal surgery [19]. Previous workers [20, 21] in their studies concluded that any change from the normal pattern of lumbar and sacral vertebrae such as lumbosacral transitional vertebra result from the mutation of Hox-10 and Hox-11 genes.

Sacralization of coccyx as observed in 6.25% cases in the present study may be a cause of failure of caudal block failure because of inability to feel the sacral cornua
an important landmark during the procedure of caudal anesthesia. It may also be a reason for prolonged second stage of labour and increased frequency of perineal tears because of immobility of coccyx and no increase in anteroposterior diameter of pelvic outlet during labour [22].

In case of unknown bodies with vertebral synostosis, if the ante mortem radiographs of such cases of vertebral synostosis are available then these radiographs may be helpful in identification of the dead bodies.

**Conclusion**

From the present study, we can conclude that after the lumbosacral region, cervical vertebrae are most commonly involved in congenital fusion especially those of upper cervical spine, whereas thoracic and lumbar vertebrae are usually fused due to acquired causes which may be infective, traumatic or surgical and vertebral synostosis can be helpful feature for identification.

**Conflict of Interest**

None Declared

**References**


21. Wellik DM, Capeechi MR. Hox 10 and Hox 11 genes are required to globally pattern the mammalian skeleton. Science 2003 Jul;301(5631):363-7


Legend 1: Figure-1 left lateral view of fused 2nd and 3rd cervical vertebrae showing fused spines and pedicles along with pitted and widened left superior articular facet of axis. Figure-2 is the superior view of the same vertebrae showing the left superior articular facet of axis overlapping the foramen transversarium. Figure-3 is depicting partially fused bodies (FB) of these vertebrae. Figure-4 showing first three cervical vertebrae fused in left lateral view with lateral masses of atlas fused with axis and 2nd and 3rd cervical bodies fused.

Legend 2: Figure-5 superior view of fused first three cervical vertebrae with atlas displaced forwards narrowing the vertebral foramen VF. Gap between anterior arch of atlas and dens of axis can be seen. Figure-6 showing the partial fusion of thoracic (T2 & T3) vertebral bodies in the lateral view. Figure-7,8 showing posterior and anterior view of lumbar vertebrae (L2 & L3) with no fusion of vertebral arches and completely fused vertebral bodies (VB) with slight bulging at this level.

Legend 3: figure-9-12 showing anterior, posterior, lateral views of unilateral fusion of L5 vertebral transverse process (left) with ala of sacrum with enlarged right transverse process, (AS-aucural surface) Figure-13 showing bilateral fusion of L5 with ala of sacrum with partially fused bodies of L5 and S1 with 5 pairs of sacral foramina.

This article can be cited as:
PERCEPTION OF ETHICS & CONSUMER PROTECTION ACT (CPA) AMONG DOCTORS

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Abstract
Knowledge about medical ethics and Consumer Protection Act (CPA) is very essential now a day as it is the era of litigations. A questionnaire regarding Ethics and CPA was prepared to know about the awareness of these topics among doctors. Though 98% of the doctors had heard about CPA and knew that they were included in CPA, only 46% of the doctors could identify the limitation period for suing a doctor correctly. A overwhelming 32% of the doctors believed that limitation period for filing a complaint was 14 days. To conclude it is our duty to know about CPA and adapt protective measures like good documentation, discussing with the patients about treatment/ operation, taking Consent personally and thus avoid litigations in the future.

Keywords: Ethics, Consumer Protection Act, Doctors, Medical Ethics, Academic Professionals.

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Introduction
The relationship between doctor and patient is based on trust and confidence. Lucky doctors of the past were treated like God and people revered and respected them. Today, we witness a fast pace of commercialization and globalization on all spheres of life and the medical profession is no exception to these phenomena [1].

Knowledge about medical ethics is very much required among the health care professionals as it is the moral principles in dealing with each other, their patients and the state. It was on 13th November 1995 that the honorable supreme court of India delivered judgment on application of consumer protection act, 1986 to the medical/dental profession, hospitals, dispensaries, nursing homes and other related services [2].

As doctors are included in the CPA, we have to know the Act, the limitation period to file a complaint by the patient, recent amendments and reduce the risk of being sued by elevating the professional standards of practice. The medical profession has come under pressure due to globalization and liberalization; therefore, now is the time to think well and to set our priorities right, both individually and collectively [3].

The purpose of this study is to stress the importance of medical ethics & CPA among Doctors. This study included the Academic Professional doctors as they have to realize the importance of these topics in their day to day practice.

Materials and Method
A cross-sectional study was conducted at Bapuji Hospital and Research center, Davangere. A questionnaire was prepared and one hundred Doctors (Academic professionals) who willfully consented to participate were asked to fill their response among the choice given. A self-administered, structured questionnaire
written in English validated through a pretested survey including 20 items was used to evaluate the awareness and practices regarding ethics and CPA among all the participants.

The questions were based on ethics, awareness of provisions of CPA as applied to medical profession, aims and objectives of CPA, conditions a consumer comes under CPA, time period for the patient to sue the concerned doctor, in case of frivolous complaint, time of appeal against orders of the district forum. No prior intimation was given about this questionnaire and they had to fill their response on the spot.

**Results**

Seventy two percent of the practicing doctors knew the definition of Medical ethics, but only 46% knew what ethical behavior is. *(Chart-1 & 2)*

**Discussion**

The awareness of ethics among academic professionals is less. Though most of the doctors knew what CPA is but they did not have an idea as to the limitation period for filing a complaint by the patient. Many doctors believed that by elevating the professional standards of practice, the risk of being sued can be reduced. A similar approach was projected by the study conducted by Singh K [4], et al at Udaipur, Rajasthan on Medical and Dental Doctors, where they found that Medical doctors had more awareness about CPA.

**Conclusion**

The results clearly indicate the knowledge of Medical Ethics and CPA is limited. It brings out the point that none of the Doctors are prepared to attend court to give
evidence. Ignorance of the law of the land is no excuse in the court of law, at least the laws concerning to practice of medicine. Because of the increase in the number of litigations against Doctors in the Consumer courts, it is our duty to know about CPA and adapt protective measures like good documentation, discussing with the patients about treatment/operation, taking Consent personally and thus avoid litigations in the future.

Acknowledgement
We would like to thank our beloved Principal Dr Manjunath Alur, J J M Medical college for his kind support in conducting the study, also our HOD Dr Vishwanathan K G for his timely guidance and advice.

Conflict of interest
There is no conflict of interest as there are no sources of funding in this study.

References

This article can be cited as:
**Case Report**

**A CASE OF SEXUAL PERVERSION: A CASE REPORT**

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Chaliha R, Professor & Head,*

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**Abstract**

In this modern world people become busy and more casual. In the 8th century BC Chinese emperors kept eunuchs to guard their harems and also used them as domestic servants. Since long there has been a tradition in India that at the auspicious occasions eunuchs go to houses where celebrations are being held. Now a day’s people become more perverted. A perverted person is one who gets sexual gratification by doing some unnatural acts. Transvestism is type of sexual perversion in which a person gets sexual gratification by wearing the garments of the opposite sex. Sodomy is a type of unnatural sexual offence. In metros both Hijrahs and Zananas are professionally working as catamites for earning their livelihood.

This was a case of sexual perversion coming to the mortuary of Forensic Medicine, Gauhati Medical College and Hospital. On examination it was found to be a case of sodomy followed by strangulation. This was an uncommon case and needs a thorough discussion. Here the case and the various autopsy findings were discussed in details.

**Keywords:** Sexual Perversion, Transvestism, Sodomy, Hijrahs, Zananas, Autopsy.

---

**Introduction**

In the 8th century BC Chinese emperors kept eunuchs to guard their harems and also used them as domestic servants. In the Mughal dynasty, the Hijrahs were officially employed to take care of harems as they were castrated males, which could not exploit the females sexually, but were able to carry out all the domestic work. With the decline of the Mughal dynasty this system of preparing Hijrahs and using them as source of earning persisted in the society of Hijrahs. Sodomy is a type of unnatural sexual offence where anal intercourse is done between two males or between a male and a female [1, 2]. In sodomy there is always a passive agent and an active agent. The passive agent is known as catamite (in case of boy) and gerontophilia where the passive agent is an old man [3, 4].

In India, there is a class of people known as Eunuchs who act as passive agents in the practice of sodomy by the way of male prostitution, for earning livelihood [4, 5]. These people usually dress themselves like women, grow long hairs and dress in women fashion, wear ornaments and adopt most of the female tastes and habits. Among these there are two different groups: the Hijrahs (who have been castrated and penis amputed usually before puberty) and Zenanas (they donot suffer from alteration of their genitalia by operation, though they behave mostly like female prostitutes to their customers) [4]. Transvestism is type of sexual perversion in which a person gets sexual gratification by wearing the garments of the opposite sex [1, 4].

This was an uncommon case of homicide of a Zenana and discussed here thoroughly.
Case Report

On 7th August’ 2012 an unknown case was brought to the mortuary for autopsy by police. On examination it was found to be a male dead body of average built wearing a top and black bra. Golden colored earrings present over both the ears. Bluish discoloration present over the face. Post mortem hypostasis was present and fixed. Rigor mortis was present and fully developed.

Cause of Death

Death was opined to be due to coma as a result of injury sustained on the head as described. All the injuries were antemortem caused by blunt force impact and homicidal in nature.

Discussion

With the increase in population and limited job opportunities more people become unemployed. The burning question of unemployment forces the people to adopt other means to earn their livelihood (like zanana, robbery, etc). Nail marks on this victim suggests that probably the assailant was standing on the back of the victim grasping the neck forcefully during the act of sodomy. The ligature mark suggests that some ligature was applied from behind to hold the victim in position. Injury on the head suggests that probably the assailant was a saddist.

In this modern world everybody was aware about the risk factors of AIDS. Inspite of all the knowledge some people were engaged in these kinds of activities. The credit goes to our system where poverty and unemployment dominates.

Government needs to look into the matter seriously. Police should try to find people engaged in such kind of activities and should punish those who are found guilty. Creation of more job opportunities will definitely solve the problem to some extent.

Conflict of Interest

None Declared

References


This article can be cited as:
FATAL SUICIDAL GUN SHOT INJURY

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Article history
Received Dec 12, 2012
Recd. in revised form June 2, 2013
Accepted on June 24, 2013
Available online June 25, 2013

Abstract
Gunshot injury generally gives an impression of assault, although cases of suicides as well as accidents resulting from gunshot trauma have been reported in literature. Here a case is presented wherein a young healthy middle aged male was found dead on the driving seat of his own vehicle outside a bar. A revolver was found nearby and his skull showed evidence of entry and exit wound of a firearm with findings suggestive of contact shot. Deceased was a rich businessman who came out for drinks along with his friends. His friends were now missing from the scene and license of revolver was untraceable. All evidences pointed towards murder but thorough investigations by police and autopsy findings confirmed it to be suicide. Deceased was suffering from bipolar disorder and apparently shot himself during the outburst using his own unlicensed revolver. This case suggests the importance of psychiatric evaluation and psychological autopsy in cases of alleged homicides and suicides.

Keywords: Bipolar disorder; suicide; gunshot injury

Introduction
Deaths due to gunshot injuries are encountered by forensic experts regularly all around the world. Gun itself is considered a weapon of choice when it comes to offending others or defending oneself. The weapon, which besides money, is considered a symbol of power and safety among general population when used as a weapon for suicide certainly raises questions to the investigators. Aside from the more common occurrences of death resulting from one individual shooting another with a firearm, there is growing number of unintentional self-inflicted methods that result in the loss of life [1].

We present such a case where an economically and socially sound individual living normal life is found dead inside his car parked outside a bar where he had gone to drink with his friends. Friends who were earlier missing from the scene were traced; they confessed the act to be suicidal in nature. The investigating officers and relatives were not satisfied as to the manner of death being suicide since the deceased was known for being someone living his life lavishly and happily and the way many people would dream to live. The autopsy finding and circumstantial evidences however were in contrast to his personal history provided. It was later during the course of investigation and interrogation that he was allegedly known to have some episodes of psychiatric bipolar disorder in the past. On detailed interrogation and examination of the scene a surprising story was revealed.

Case Report
Deceased body of moderately built and nourished middle aged male measuring 170cms in length and weighing 74kgs was examined in our mortuary. Following injuries were present on the body:

An elliptical perforated lacerated wound with irregular margins and contused edges (entry wound), measuring 1.5cm x 1 cm, was present on the right side of head, 7.5 cm above and 2 cm to the front of right mastoid process and 8 cm behind the outer angle of right eye, situated 164 cm above the right heel. A superficial laceration with irregular margins, measuring 0.2 cm X 0.2 cm, was present on the right side of head 1 cm below the above mentioned injury. Both the injuries were surrounded by an imprint contusion (Muzzle Imprint) of 3cm X 2.5 cm. (Fig 1)

No singeing of hairs and smudging of skin were seen surrounding the entry wound. There were no other external injuries present on the body. Fingers of right hand were smudged with some black substance. Few blood stains were present on the front and outer aspect of lower third of right arm and upper two third of right forearm. Three swabs were collected from the surface of right hand. Dead body was subjected to X-ray of skull (AP view) which did not show presence of any foreign bodies in the skull.

A perforating fracture measuring 1cm X 1cm of right frontal bone and a fracture measuring 3.5 cm X 3cm (with beveling at outer aspect) of left frontal bone corresponding to entry and exit wounds described above respectively. A fissure fracture measuring 13 cm in length of left parietal bone (In sagittal plane). A zigzag fissure fracture measuring 12 cm in length of the frontal bone (In coronal plane). Bilateral contusion of temporalis muscles and subscalpal tissue (frontal, parietal and temporal area) was present. Dura is torn bilaterally corresponding to entry and exit wounds.

Brain weighed 1300 g, was soft. Bilateral laceration of temporal and frontal lobes corresponding to entry and exit wound were present, with destruction of brain matter in between (Fig 3). All the other internal organs were unremarkable.

**Discussion**

As per the information furnished by police it was alleged that one night, the deceased who was in drunken state, shot himself in head using a gun while sitting on the driver seat in his Scorpio jeep. It was later known through the information provided by family members and some friends that the deceased had previous episodes of bipolar disorder.

In bipolar disorders, there is usually
shifting of mood between mania and depression. Manic episodes are characterized by pressured speech, flight of ideas, poor judgement, high levels of restlessness and excitability, and inflated mood and sense of self [2]. People with bipolar disorder ride an emotional roller coaster, swinging from the heights of elation to the depths of depression without external cause. Some people with recurring bipolar disorder attempt suicide “on the way down” from the manic phase [3].

Inebriants refer to any substance that induces mental excitement, confusion, euphoria and stupor when consumed. The most suitable compound of this category is considered to be alcohol. Depending upon the amount consumed clinical features of an individual varies. With amount lesser than blood alcohol concentration of 100 mg%, the consumer is in state of sobriety to euphoria. Talkativeness, over-confidence and decreased inhibitions are major features. Any amount more than that would lead to the stage of excitement and confusion wherein the consumer is emotionally instable, memory and comprehension impairments are observed, disorientation and confusions supervene, speech is slurred and gait is staggered. It is in this stage most of the offences associated with drinking are committed. [4].

On visiting the crime scene the casing of the bullet was found in the driver’s compartment. The victim, a right handed individual shot himself on right temple (contact shot), bullet after exiting from the victim’s head was ricocheted by the roof of the vehicle towards the rear glass but could not penetrate it due to loss of kinetic energy and was found below the rear seat during crime scene investigation. The pistol used for committing the act, which had the muzzle imprint matching that of an imprint found on victim’s forehead (suggesting contact shot) was found on driver’s seat (Fig 4). Evidence of gun powder was seen on right hand of victim suggestive of self-assault. In gunshot fatalities, a reconstruction of the events can be possible on the basis of a variety of autopsy and scene findings. However, unfavorable factors such as putrefaction, burning or dumping of the body can make this very difficult. [5]

According to deceased’s friends, on the fateful night, the deceased was drunk and was illogical and incomprehensible to others. It was alleged that his friends were provoking him of not possessing a gun which he had earlier claimed to have owned. They said that it was more of an impulsive act that he took out his pistol and put it over his own head and accidentally shot himself on his head during the squabble. Thus, the drunken victim, with bipolar disorder, under provocation by his friends performed such an impulsive act. Although the cause of death was not much of confusion, the manner of death till date remains unanswered as to whether it should be called a suicide or accident.

Conflict of Interest

None Declared

Reference


This article can be cited as:
**Case Report**

**DEVELOPMENT AND DEATH ON RAILWAY TRACK - A CASE REPORT**

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<table>
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<tr>
<th>Article history</th>
<th>Abstract</th>
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<td>Received Apr 05, 2013</td>
<td>Injuries and deaths due to accidents are inescapable in the modern way of living. The accidental deaths are mostly due to the road traffic but the deaths due to railway fatalities are also not negligible, especially in the areas where railway traffic is high. Southern railways are major mode of transportation of the passengers and goods; consequently the incidences of railway fatalities and mishaps are also high in south India. Most of the reported cases of railway deaths brought to the conclusion that either the victim was directly hit by the train or died due to some other reason, but the body was recovered in the vicinity of the railway platforms. Here we are discussing the injuries in a young pregnant woman in a train and pedestrian accident, where the injury to the abdomen resulted into the expulsion of preterm fetus and death of pregnant woman.</td>
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<td>Recd. in revised form June 23, 2013</td>
<td></td>
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<tr>
<td>Accepted on June 23, 2013</td>
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<td>Available online June 25, 2013</td>
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<tr>
<th>Corresponding author</th>
<th>Keywords: Railway accident, Death, Delivery, Autopsy.</th>
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**Introduction**

Indian railway is largest public sector enterprise in the world. It caters to the transportation need of millions of people every day at low cost, maintenance and safety of railways as well as security of passengers have always been a herculean task ever since its inception [1]. Suicide by collision with a train accounted for 1-12% of all suicides with up to 94% of all attempts resulting in death. Suicide by train seriously affects not only survivors but also train drivers and bystanders. Correlations between density of rail network, number of passengers and number of suicides by train have been found to be proportional [2].

**Case report**

1. A 22 year old unmarried woman was found dead on the railway track along with a dead female newborn baby at 7:00 AM on 06.08.2010
2. Subjected for autopsy between 3:45 PM to 5:15 pm on the same day.
3. Suicide note brought by police.
4. UDR no:133/2010 U/S 174 CrPC

**At Autopsy:**

**External examination**

1. Left eye propped out of orbit.
2. Postmortem staining faintly present.
3. Rigor mortis setting in.
4. Dried blood stains, oil and grease stains present at places over the body.
5. Pregnancy changes +
6. Dead body of a female baby, part of placenta was brought along with the body.

**Injuries**

1. Head crushed, front to back, skull shows multiple fractures, meninges lacerated irregularly, brain matter partially drained out, covered with blood and blood clots.
2. Abdomen is crushed, 25cmx20cmx abdominal cavity deep, extending from right flank to middle of left pelvis, with irregular laceration of liver, spleen and kidneys, coils of
intestines protruded out, edges show contusion with grease stains.

3. Crushed laceration, 22x7 cm x bone deep present over upper one third of right thigh with fracture of underlying femur bone.

4. Crushed laceration, 8x6 cm x bone deep present over lower one third of right leg with fracture of underlying bones.

5. Crushed laceration, 8x5 cm x bone deep present over upper one third of left leg with fracture of underlying bones.

6. Right shoulder joint, left wrist joint: fractured and dislocated.

7. 2nd, 3rd and 4th ribs on left side fractured at the sternal end with 100 ml of blood in pleural cavity.

Uterus

Measures 18 cm x 15 cm x 3 cm, weighs 583 g (gravid uterus) with irregular laceration, 15 cm x 6 cm x uterine cavity deep present over anterior surface of the fundus. Uterine walls are congested with remnants of torn membrane and placenta. The remaining part of placenta with torn cord brought separately along with body. No signs of stretching of vagina. Cervix is dilated up to 8 cms.

Examination of baby

Dead body of female baby brought along by police. Weighs 3.2 kg measures 50 cm in length with signs of live birth (abdominal girth > chest, hydrostatic test positive, meconium present at rectum, ossification centre for lower end of femur and upper end of tibia appeared)

Injuries on the baby

1. Scalp laceration, 2 cm x 3 cm x bone deep, left side of forehead.

2. Cranial vault shows comminuted fracture, meninges lacerated, brain covered by blood and blood clots.

3. Spine C7 – T1 vertebra level, fractured.

Discussion

The deceased, an adolescent unmarried pregnant female was found dead near rail track with fetus. The injuries mentioned above are consistent with train – pedestrian accident.

Further the history (suicidal note) and injuries over dead body points towards suicidal manner of death.

Regarding the manner of delivery, the injury over the abdomen and to the gravid uterus has led to the expulsion of fetus through the abdominal route. The uterus was large, the mucus membrane congested with remnants of torn placenta, these findings refute that uterus was gravid.

Regarding whether she was in labour, she being a primigravida, her cervix appeared to have dilated up to 8-10 cm which occurs in the active phase of 1st stage of labour and she could have been experiencing labour pains prior to death. However there were no signs of vaginal stretching (per vaginal examination) which occurs in the 2nd stage during the expulsion of foetus through vagina. She had succumbed to the injuries by then after which the baby was expelled out of the injured uterus.

Cause of death

• Cause of death: Death is due to multiple injuries sustained, consistent with railway injuries.
• Live born, full term female baby, expelled through the crushed abdomen and uterus, death is due to head injury sustained.

Discussion

Suicide method is any means by which one or more persons purposely kills themselves. Though individuals with suicidal feelings may consider following methods, most do not ultimately act upon them.

Some people commit suicide by deliberately placing themselves in the path of a large and fast-moving vehicle, resulting in a fatal impact. Some may throw themselves directly in front of an oncoming train or drive a car onto the tracks and sit inside while they wait for the train to arrive.
People who commit suicide in this manner usually stay at or around the site. In suicides involving above ground railway lines, the victim will often simply stand or lie on the tracks waiting for the arrival of the train. As the trains usually travel at high speeds (usually between 80 and 200 km/h), the driver is usually unable to bring the train to a halt before the collision. This type of suicide may be traumatizing to the driver of the train and may lead to post-traumatic stress disorder. The sound of a train striking a person has been likened to that of hitting a pumpkin.

Suicide by being hit by a train has a 10% survival rate; a failed attempt typically results in severe injuries, including massive fractures, amputations and concussion, possibly leading to permanent brain damage and physical disability. Even when death occurs, it is not always painless and immediate.

Suicide methods can be classified according to two modes of interrupting life processes physical or chemical. Physical modes of interruption typically act by incapacitating the respiratory system or the central nervous system, usually by destruction of one or more key components. Chemical modes focus on interrupting biologically significant processes such as cellular respiration or diffusion capacity. Chemical methods of suicide produce latent evidence of action, whereas physical methods provide direct evidence.

Conflicting data exist on gender ratio of this type of suicide, but studies are homogeneous in identifying young adults (20-40 year of age) as those most exposed to train suicide. Documented psychiatric diagnoses were found in up to 83% of cases. Mid-seasonal peaks were also identified, with events occurring mostly during late morning and early afternoon. Limited evidence exists for effective suicide prevention practices. Successful examples are represented by pits and sliding door systems (Singapore Mass Rapid Transit System) and responsible media reporting (Viennese Subway). Suicide by train involves emotional and financial costs to individuals and society as a whole. A combination of different strategies might significantly reduce its effect [2].

Postmortem examination study for data related to the age and sex of the victim, seasonal variations, type of train involved, part of the body affected and the pattern of injuries in different parts of the body. Detailed autopsy examination and subsequent statistical analysis was done [3].

The suicidal events were evenly distributed by months and weekdays. However, most suicides occur during the day while unintentional events usually occur at night. Most train-person collisions happened in densely populated areas and 75% of the suicide victims were waiting on the track before the collision. Significance test between types of injury event (suicide, accident or unknown intent) showed small or no differences [4].

Close to 10% of all railway suicide attempts are non fatal. Fatality of suicidal behaviour on railway tracks is significantly associated with male sex pointing to a certain degree of ambivalence. Higher odds to die on open track area, fast track lines and during night-time suggest a reduced opportunity to survive due to circumstances [5].

Most of the railway fatalities were accidental in nature and in the bread earning age group particularly among the males. The increasing number of population, overcrowding in the trains, reckless and careless behaviour of the passengers, pedestrians and the train drivers towards safety norms are the constant causes of railway fatalities.

People must follow some easy set of laws like do not travel on footboard, do not enter or get down from running trains, do not try to cross the level crossing gate when it is closed, be alert and reduce your speed while approaching railway unmanned level crossing. Never guess the speed of the train and adhere to the set norms of railway safety to curb this menace. The railway authority must take some steps to prevent the accidents by acknowledging the safety engineering, training and awareness among staff, attentive surveillance, high quality maintenance and strict law enforcement [6].

Conclusion
The high levels of the railway fatalities make a strong case for the necessary accident control interventions. Public as well as the railway authorities must take some measures to bring down these fatalities. Methods to reduce the rail-related suicides including CCTV surveillance of stretches where suicides frequently occur, with direct links to the local police or surveillance companies, which enables the police or guards to be on the scene within minutes after the trespassing was noted. Public access to the tracks should make more difficult by erecting fences. Trees and bushes to be cut down around the tracks in order to increase driver visibility. Decrease the number of suicide attempts in the underground a deep drainage pit halves the likelihood of fatality. Separation of the passengers from the track by means of a partition with sliding-doors is be introduced in stations, though it is expensive.

Conflict of Interest

None Declared

References

Photograph 4 showing laceration over abdomen exposing the lacerated uterus

Photograph 5- per vaginal examination showing no signs of stretching of vagina with dilated cervix (upto 8 cm)

Photograph 6 showing laceration over the fundus of uterus and dilated cervix

Photograph 7 shows head injury in the newborn

This article can be cited as:
A SUCCESSFUL ATTEMPTED SUICIDAL HANGING: A CASE REPORT

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Abstract
Suicide by hanging is one of the commonest methods of committing suicide. Suicide cases are many a times just an attempt done hesitantly, but some succeed and some survive. Here we report a case where the deceased has confessed by writing in the suicide note that she is just attempting and does not know whether she will survive or not. Unfortunately she succumbed to it. It is interesting to note in the case that it was just an attempt to hang herself revealed by the message in the suicide note. Suicide note is a very important piece of corroborative evidence in suicide cases.

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Keywords: Attempted suicide, hanging, Suicide note

Introduction
Suicide [1] has been defined as an act of self-inflicted, self-intentioned taking of one’s life. Hanging is a form of ligature strangulation in which the force applied to the neck is derived from the gravitational drag of the body or part of the body. [2]Hanging is mostly suicidal, sometimes accidental and rarely homicidal. Suicidal hanging is self-suspension of the body. As with other suicidal method, hanging can also be an attempt only on the part of the suicide. If the suicide attempt fails and the victim later confess about the incidence, then only the fact of attempted suicidal hanging comes into the light. But if the victim succumb then no evidence remains that can say that it was only a case of attempted suicide.

Here is the case report of a 17 yr old girl staying at a girls’ hostel at Pushpa Vihar, New Delhi who attempted suicide by hanging and succumb to it leaving behind a suicide notes which says that it’s only an attempt.

Case report
A 17 yrs. girl student of D Pharma at DISPAR, Pushpa Vihar, New Delhi was found hanging in her hostel room on 31.10.2011 with the help of a scarf by the ceiling fan at around 7:45 pm in the evening by the college staff and students. The police was informed at around 8:05 pm in the evening. The police found the body in hanged condition. During examination of the scene, the police found a diary. On one page there was a note written by the deceased as “she is just going to try and not know will live or not” and undersigned along with some other absurd words. The police got the writings and the signature verified and confirmed that of the deceased.

Autopsy findings
The post-mortem of the deceased body was conducted in AIIMS mortuary, New Delhi on 01.11.2011 by a team of doctors.

On external examination she was of average built of height 5 feet 2 inch and weight approximately 55 kg. Rigor mortis was present all over the body. Post mortem lividity was present over back. No sign of decomposition was present. Face was congested and both eyes were closed. Tongue was protruded between teeth
(tongue bite). Linear salivary stain was present over the upper part of the chest in the midline suggestive of the suspension point being of the back of neck. Lips, mucus membrane of mouth and nails showed bluish discoloration.

A green color scarf of synthetic fabric was loosely present around the neck with a single fixed knot. It was removed intact and various measurement taken. Circumference of the noose was 68cm, the length of the free arm besides the noose was 50cm and circumference of the scarf after tight rolling was 5.6cm.

After removing the scarf, the neck showed a brownish, grooved, parchmentized ligature mark over the upper part of the neck. The mark was running obliquely upward and backward towards both mastoid processes and then merging with hairline as typical of a suicidal hanging mark. The mark was 1.7 cm in width and the total neck circumference was 30cm.

There was no other ante mortem injury present over the body or genitalia.

On internal examination heart was healthy, stomach contained approximately 20 cc of partially digested food particles, gastric mucosa was healthy and uterus contained menstruating blood. All other internal organs were congested but otherwise healthy.

On dissection of neck the soft tissue underlying the ligature mark was hard to touch and glistening. There was no extravasation of blood or hematoma in the soft tissue. Neck musculature was intact. Thyro-hyoid complex was intact. The tracheal and laryngeal mucosa was healthy. The cause of death was given as asphyxia due to ante-mortem hanging.

Discussion

As evident from the above external and internal findings, it was a case of typical suicidal hanging in which death was due to asphyxia. The interesting point was that it was a case of pure attempted suicide in which the deceased succumbed as it was clear from the note found by police which said “M sorry papa M to bus try krne jar hi hu M bach jaugi mujh pta n” means "I am sorry papa, I am just going to try. I don’t know I will live". There were also other absurd words. The writings and the signature over the note was confirmed by the police as of the deceased.

Usually, in attempted suicide cases if the victim survives and he confesses about the attempt to commit suicide, then only the case of attempted suicide comes into knowledge. But if the attempt somehow succeeds, there remains no evidence to confirm that it was just an attempt to commit suicide. Here in this case the notes written in the diary clearly indicates that it was a case of attempted suicide which somehow succeeded and the victim succumbed. One thing in our findings which also suggests that it was only an attempt is the noose of the ligature material used for hanging which was 2 times than the neck circumference.

The finding of an inappropriately large noose of the ligature around the neck may suggest that the victim was not really determined to destroy herself and hesitantly trying. The means of attempting suicide can be by hanging, consuming poison, cutting the hand, jumping from height, jumping before the running train etc. It is also known that the person can commit suicide using multiple means. The person with suicidal tendency may had multiple attempts using multiple means. In India the attempt to commit suicide is a punishable offence [3] under Sec. 309 IPC. No body has the right to take his own life. However the police and the court is generally lenient to the victim as they suffer mental and sometimes physical trauma. They are mostly changed to accidental cases. Recently there has been voices from the legal experts and the public to abolish the punishment for the attempted suicide on humanitarian ground. This case also highlights the importance of the suicide note as corroborative evidence provided it is verified authentically. The note left by the suicide completer or attempter may give an indication not only of motive but also of the state of mind. The exact incidence of suicide note left by suicide completers or attempters or ideators are not known. The etiology of suicide can be correctly established if the findings of psychological autopsy are correctly matched with those of
Suicide is a disturbing social problem. The causes of suicide are multifactorial – social, economic, work pressure etc. The society has to be sensitized. There are helplines or suicide lines to assist those people who are in stress and at risk to commit suicide. The helplines are taken care of by team of psychologist, social workers, counselors and nurses.

Conflict of Interest

None Declared

References

Case Report

ACCIDENTAL LIGATURE STRANGULATION IN CHILDREN –CASE REPORTS

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Article history
Received Apr 29, 2013
Recd. in revised form Jun 13 2013
Accepted on Jun 13, 2013
Available online June 25th, 2013

Abstract
Deaths due to strangulation are mostly Homicidal in nature and accidental strangulations are rare. Though many authors have described accidental strangulation deaths as a rare entity, the numbers are presently increasing. Here we report two cases of accidental strangulation in children of which both were due to a home-made hammock resulting in death.

Introduction
Strangulation refers to the application of external pressure on the neck either by hands, or by a ligature, or by any other material. It is a form of asphyxia caused by constriction of the neck without suspending the body.

Strangulation that is effected by a ligature is called ligature strangulation, while that which is accomplished by bare hands is called manual strangulation or throttling. In ligature strangulation, the material used can be anything from flexible rubber tubing to cloth, or sticks, wooden planks, belt, wire, rope etc. The ligature is usually wound transversely around the neck, sometimes with several turns, and is often below the level of thyroid cartilage. Intense congestion of face, bleeding from nose, mouth, ears and injury to neck structures are characteristic features.

Strangulation deaths are usually Homicidal. Suicidal and accidental strangulations are rare [1]. The rareness of accidental strangulation deaths have been noted by some famous authors through their experience as follows:

- “Accidental strangulation is rare. It is seen when a tie, scarf, or other article of clothing gets entangled in a moving machine” - Di Maio [2].

- “In forensic practice, if hanging is excepted as a separate entity, most ligature strangulations are homicidal. Some are suicidal and a few accidental, usually in children” - Knight [3].

- “Strangulations are almost always homicidal, except in children where they tend to be accidental. Strangulations may rarely be accidental, as in work place accidents in which a tie or other article of clothing is caught on machinery” - Dolinak [4].

However, the incidences of pediatric deaths due to unnatural means are increasing [5]. Accidental strangulation is a potentially fatal injury and various cases have been reported in children. Clothing and personal belongings were found to be the most common ligature materials [6, 7, 8].

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Case Reports

Case 1

A 10 year old girl was playing in a hammock made by slinging a saree from the ceiling. The saree twisted and her neck was entangled. She was found dead by her mother after an unknown period of time after the event. She was rushed to nearby hospital but was declared 'brought dead'. The incident happen on 21-10-2011 around 8.30 PM and Medico-legal autopsy was conducted on the 22-10-2011.

On External Examination

A transverse faint ligature mark was present over the front and sides of the neck measuring 9x2cms. It was 0.5cms below the level of thyroid cartilage, 5cms below right ear lobule and 5cms below left ear lobule. Face was congested and cyanosis of lips and nail beds were seen. No other external injuries were present.

Internally, on neck dissection, the left and right sternocleidomastoid muscles were contused over their middle parts, which measured 3x2cms, 3x3cms respectively. Also contused was the left and right sternohyoid muscle along with sternothyroid muscle, all measuring about 2x2cms. The brain, lungs and viscera were seen congested The heart, lungs and brain (white matter) showed petechial haemorrhages over their surfaces.

Cause of death was given as 'Asphyxia as a result of compression over the neck by strangulation'.

In both cases, manner of death was confirmed by visiting the scene of death.

Discussion

The inquisitive nature of children during play activities may result in their entrapment in objects and spaces from which they are not able to extricate themselves and thus die as a consequence. Non-Intentional, accidental self strangulation of young children with loose wires, cords, and other potential ligatures found commonly around the house and often in close proximity to their beds are well documented. Entanglement in such cords was responsible for 14.3% of American childhood deaths [9].

Although strangulation is mostly homicidal in adults, it is mostly accidental in children. It is the fourth most common cause of unintentional injuries for infants under the age of 1 after road traffic accidents, drowning & burns [10]. Several case studies have been reported on deaths due to accidental strangulation in children by researchers from different parts of the world. A review of literature mentions the studies conducted,
a) Centers for disease control and prevention; USA 1997-1998, where they reported 11 pediatric cases who died due to entrapment asphyxia [11].

b) Altman & Nolan in 1995 reported 16 deaths due to accidental ligature strangulation out of the 31 accidental strangulations [12].

c) The Office of Population censuses & Surveys have reported 12 cases of children who died of accidental ligature strangulation between 1990 & 1991 in England & Wales [13].

d) Nixon et al reported 11 cases of deaths due to accidental strangulation in children with a mean age of 1 to 8 years [14].


The following are noticed to have caused accidental strangulation in various studies.

- **Agent of strangulation Reports**
  - Window blind cords
  - Entrapment in beds, cots, or cribs
  - Clothing drawstrings
  - High chair straps
  - String suspended over the crib,
  - Lamp cord entanglement
  - Cable tie
  - Pacifier strings
  - Necklaces
  - Ropes, including rope swings attached to a rattle
  - Automatic motor vehicle window
  - Shoe string.

**Conclusion**

In the cases that have been reported by us, saree used in homemade hammock twisted around the neck of the child and caused Accidental strangulation. The injuries in the neck structures are due to compression over the neck and asphyxial signs were noted. Although accidental strangulation deaths are described as a rare entity, the numbers are presently increasing. It is advisable for parents to keep a close watch at all times on children to prevent such mishaps in future. Avoid Potentially dangerous-playful materials at home and if affordable use more safer cradles available in market.

Fig 1: Showing Contusion over the Left Sternocleidomastoid Muscle

![Fig 1](image1)

Fig 2: Showing Contusion over Right sternocleidomastoid, Left Thyrohyoid & Sternothyroid Muscles.

![Fig 2](image2)

Fig 3: Showing Contusion over Left lobe of Thyroid Gland

![Fig 3](image3)
Acknowledgement – Dr. Ananda K is thanked for his support and guidance.

Conflict of Interest

None Declared

References

RAPE LAW-LATEST TRENDS: CRIMINAL LAW (AMENDMENT) ACT 2013 AND SUPREME COURT ON RIGHT TO PRIVACY

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ABSTRACT

Following the gang rape and murder of the unfortunate physiotherapy student in a moving bus in National Capital the Country was shaken. The publicity of the incident and public outrage forced Government to amending the law on rape and its punishment. Late J. S. Verma, former Chief Justice of India, was appointed by the Central Government, to suggest amendments to criminal law to sternly deal with sexual assault. One of the main changes brought to the Criminal Law (amendment) act 2013, is raising the age of consent to 18 years. Judiciary is also trying its best to make rape victims more comfortable by means of providing them the right to privacy. Supreme Court has commented two finger test violates rape victim's right to privacy.

KEYWORDS: Amended Rape Law 2013, Two finger test, Right to privacy of rape victims.

INTRODUCTION

National Crime Records Bureau data shows rape cases in India have risen from 2,487 in 1997 to 24,206 in 2011- up 873% [1]. The rise of rape and other sex crimes can be attributed to the fact that youth comprises 31.5% of India’s population (NSS). The millennial generation is one of the biggest generations in numbers and by 2020 its number will represent 1 out of every 3 adults [2]. India is a Country with high unemployment, poverty and illiteracy among young and growing population. This makes an ideal condition for crime against woman.

Stricter laws are drafted with an aim to act as deterrent against sex crimes. Law of rape had been amended earlier also. By the Criminal Law Amendment Act, 1983, Sec. 375 and 376 of IPC has been substituted [3]. Under Sec. 375 I.P.C., rape had four Claus pre 1983 but following amendment it now has six descriptions. Also Sec 376 of IPC spells out the punishments which were added after the changes done in Sec. 375 I.P.C. This was the requirement then in 1983 because of the famous Mathura Case, Tukaram Vs State of Maharashtra which introduced new offence (Custodial Rape) and enhanced minimum punishment of all categories of rape [4].

CASE REPORT:

1. President has given nod to anti-rape Bill, [5] which now is known as Criminal Law (Amendment) Act 2013.
2. Two finger tests violate rape victim’s right. The Supreme Court has held that two finger test on a rape victim violates her rights to privacy [6].

Discussion:
1. Criminal Law (Amendment) Act, 2013:
   a. The Criminal Law (Amendment) Bill, 2013 is an Indian legislation passed by the Lok Sabha on 19 March 2013, and by the Rajya Sabha on 21 March 2013, which provides for amendment of Indian Penal Code, Indian Evidence Act, and Code of Criminal Procedure, 1973 on laws related to sexual offences. The Bill received Presidential assent on 2 April 2013 and deemed to come into force from 3 February 2013. It was originally an Ordinance promulgated by the President of India Sri Pranab Mukherjee, on 3 February 2013. The Bill was passed in the wake of public outrage, over gang rape and murder of a physiotherapy student in a moving bus in National Capital in the night of 16 December 2012.
   a. On 22 December 2012, a judicial committee headed by J. S. Verma, former Chief Justice of India, was appointed by the Central Government to submit a report, within 30 days, to suggest amendments to criminal law to sternly deal with sexual assault cases. The Committee submitted its report after 29 days on 23 January 2013, after considering 80,000 suggestions received by them during the period from public in general and particularly eminent jurists, legal professionals, NGOs, women’s groups and civil society. The report indicated that failures on the part of the Government and Police were the root cause behind crimes against women. Major suggestions of the report included maximum punishment for rape as life imprisonment and not death penalty. It provides stringent punishment for rapist and repeated offenders. It has provision for offences like stalking, voyeurism, disrobing and acid attacks. As per new law an offender can be sentenced to rigorous imprisonment for a term which shall not be less than 20 years but may extend to life for the reminder of natural life, with or without fine. The law even provides capital punishment for rapist if the crime causes death of the victim or leaves her in a permanent vegetative state. Repeat offenders may also get capital punishment. The new law has also amended various sections of IPC, Cr. P. C. and Indian Evidence Act. [7]

b. With relation to sexual offences, the following changes have been brought out on rape: '375. A man is said to commit "rape" if he
   a. penetrates his penis, to any extent, into the vagina, mouth, urethra or anus of a woman or makes her to do so with him or any other person; or
   b. inserts, to any extent, any object or a part of the body, not being the penis, into the vagina, the urethra or anus of a woman or makes her to do so with him or any other person; or
   c. manipulates any part of the body of a woman so as to cause penetration into the vagina, urethra, anus or any part of body of such woman or makes her to do so with him or any other person; or
d. applies his mouth to the vagina, anus, urethra of a woman or makes her to do so with him or any other person,

Under the circumstances falling under any of the following seven descriptions:—

First, against her will.

Secondly, without her consent

Thirdly, with her consent, when her consent has been obtained by putting her or any person in whom she is interested, in fear of death or of hurt.

Fourthly, with her consent, when the man knows that he is not her husband and that her consent is given because she believes that he is another man to whom she is or believes herself to be lawfully married.

Fifthly, with her consent when, at the time of giving such consent, by reason of unsoundness of mind or intoxication or the administration by him personally or through another of any stupefying or unwholesome substance, she is unable to understand the nature and consequences of that to which she gives consent.

Sixthly, with or without her consent, when she is under eighteen years of age

Seventhly, when she is unable to communicate consent

Explanation 1.—for the purposes of this section, "vagina" shall also include labia majora.

Explanation 2.—Consent means an unequivocal voluntary agreement when the woman by words, gestures or any form of verbal or non-verbal communication, communicates willingness to participate in the specific sexual act:

Provided that a woman who does not physically resist to the act of penetration shall not by the reason only of that fact, be regarded as consenting to the sexual activity.

Exception 1.—A medical procedure or intervention shall not constitute rape.

Exception 2.—Sexual intercourse or sexual acts by a man with his own wife, the wife not being under fifteen years of age, is not rape [8].

Two finger test is medically, per vaginal examination of rape victim. The Supreme Court in its own wisdom has commented this test, violates the right to privacy. Rape is not a medical term. It is a legal term. To establish a case of rape combined effort of three agencies: namely the Police, the Medical and the Judiciary are required. Charge of Rape will not get established if any one of these agencies defaults.

Doctor plays a vital role in finding evidences of sexual assault. Sexual crimes are crime against human body. The body of the victim becomes the site of crime. Therefore a doctor, can only identify this crime. There is a laid down, time tested procedure to examine rape victim. CrPC 48A deals with medical examination of victim of rape

There is no single sign which may be regarded as surest sign of rape when the girl is at or above 18 years. But, finding of spermatozoa in the genital tract of a virgin woman or pregnancy in her below the age of consent is regarded as a sure sign of rape. [9]

Rape being a legal entity it has many dimensions. Even an attempt to penetrate, with no emission of semen, without rupture of hymen is sufficient for framing charge of rape. Cornerstone remains, the act was done against will and without consent of the victim.

In short the general examination includes findings of physical injuries, which may not be there if the woman yields from fear, exhaustion, age, physical or moral attitude. Local examination includes pubic area to see, if the pubic hair is mated with seminal fluid / blood. Also following Locard's Principles of exchange- Combing of pubic hair for foreign hair is a must.

The internal examination or 2 finger test is the actual test which can prove or disprove sexual act Like Inspection with vaginal speculum, collection of vaginal swab and smear for evidence of mobile spermatozoa or Gonococcal infection. Inspection of hymen in relation to tear and its type. Lastly to find out if the vagina is capacious? Does it allow one / two fingers entry?

Modern gadget like trans vaginal probe used with ultra sound equipment's or Glaister-Keen rods cannot become substitute of internal examination. If internal examination is prohibited doctor will have to give opinion based on external
findings. These findings may not be authentic leaving huge scope to the lawyers to argue and ultimately leading to non conviction of the accused. In fact doctors will be more handicapped in his duties to justice if per vaginal examination becomes illegal. Doctors are well aware of their duties of examining a rape victim. Apart from consent the doctor examines a rape victim with full sympathy keeping in view the physical and mental trauma the victim had undergone. Generally female doctor examines the distressed victim. Doctor also offers counseling to victim to cope mental distress.

**Conclusion**

The increase of age of consent to 18 years, matches with the age of marriage for girls. This will benefits in stream lining legal procedure but probably will cause in more number of sexual crime. Though amendment is made for stringer punishment the charge of sexual has to be proved beyond doubt by doctor for women victims and men charged with rape. It will definitely be a drawback if doctor is prevented from doing requisite examination. Stronger punishment becomes ineffective tools. As per UN declaration of Basic Principals of Justice for the victim of Crime and Abuse of Power 1985, Victim of rape does require better humane treatment [10]. If Supreme Court’s banns per vaginal examination criminals of sex crime may remain unpunished for want of evidence. It is also seen that that Women are using rape laws for vengeance: New Delhi high court has decried that rape laws are often misused by women as “a weapon for vengeance and vendetta” to harass and blackmail their boyfriends force extorting money and sometimes to force the hapless man to marry them [11]. also 18% rape case false: Study (12’). Both for safe guarding the interest of victim and accused no bar should be imposed on the time tested procedure of examination in rape cases till an alternative better procedure is found out. It is interesting to observe how the doctor community deals with the new direction of Supreme Court.

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**This article can be cited as:**
HOW DEEP IS THE BITE? – A REVIEW ON BITE MARKS IN FORENSIC ODONTOLOGY

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Article history
Received May 24, 2013
Recd. in revised form June 16, 2013
Accepted on June 16, 2013
Available online June 25, 2013

Abstract
Identifying human remains by dental description is a well-established component in forensic science with its distinct scientific basis. Bite marks are significant in personal identification but one of the contentious issues of forensic odontology. Bite mark identification is relatively new but potentially important field. Because of its origin, biting is a primitive type of physical attack. It is frequently used as a weapon in absence of any other defence. Bite injuries are often seen in affairs of violent rape, skirmishes among young children and direct fatal conflicts. This paper reviews bite marks analysis and its advantage in forensic investigation.

Keywords: Bite marks; teeth; forensic odontology; forensic dentistry.

Introduction
Bite mark analysis in Forensic Dentistry addresses the difficulty of identifying persons based on the properties of teeth or identifying individuals based on their bite mark impressions. It is appropriate to precisely match a bite mark impression at the crime scene. Therefore, a method which minimizes human error to carry out the evaluation would be favourable to make sure precision and shorten individual prejudice. Bite marks are often seen on the victims of assault - particularly in cases of sexual attacks. Bitemarks are also seen in cases of child exploitation and abuse. This fundamental proof over and over again goes unrecognised by the inexperienced individuals. Any approximately crescent bruise flanked by 4 and 5cm distance must be treated as suspicious and the opinion of a forensic odontologist should be sought at the very beginning of the investigation. Forensic odontologists should not merely provide an opinion, but also shall be capable to capture the photograph of the bite mark by means of diverse illumination sources to put across the bite which can lead to accurate identification [1].

Long time ago the use of teeth as proof in criminal matters was in practice. There is some chronological information of identification by recognizing unambiguous dental features as early as 49 A.C. On the other hand, Forensic Odontology, as a discipline, did not come into sight before 1897 when Dr. Oscar Amoedo wrote his doctoral thesis entitled “L’Art Dentaire en Medecine Legale” relating the effectiveness of dentistry in forensic medicine with meticulous importance on identification [2].
Even though bite marks encompass no more than freshly gained importance, there have been cases involving teeth with the investigators for more than a hundred years. A number of individuals have been documented as being the foremost bite mark analysts. Quite a few authors have mentioned Sorup as being the earliest such investigator in 1924. He used translucent paper representations of a suspect's dentition to evaluate with life size bite mark photographs [3].

A bite mark may be defined as having occurred as a result of either a physical alteration in a medium caused by the contact of the teeth, or a representative pattern left in an object or tissue by the dental structures of an animal or human [4]. Each individual has unique dentition, hence the bite marks. Therefore the positive identification of the perpetrator is possible. It is for this reason, the bitemarks are also referred to as “Dental Fingerprints” [2].

Steps in analysis of Bite marks:

There are many steps in collecting the data of the bite mark from the victim's body. The forensic dentist should have good presence of mind to record the data in the chronological way, so that no single evidence should be missed out. The simple steps are as follows: - [5]

1. Recognition and initial assessment.
2. Swabs from the injury site.
3. Photographs.
4. Measurements and drawings.
5. Impressions.
7. Follow-up photographs.
8. Special techniques.

Methods of analysing Bite marks

For the sake of obtaining evidence from the human body, a probable bite injury has got to be documented early on, as the precision and profile of the mark could transform in a pretty short moment in time, in equally living as well as the dead victims. Bitemarks are for the most part frequently formed on the skin of victims, and they may be found on more or less in all parts of the female body. Most commonly seen in females, and for the most part often bitten on the breasts and legs all the way through sexual attacks, while bites on males are frequently seen taking place the arms and shoulders [6, 7].

Bite marks appear generally as oval or round areas of bruise or abrasion, sporadically with associated indentations. There may possibly be avulsion of tissue, or even pieces of tissue bitten off. There may be considerable bruises and wounds that have penetrated the skin. Once the mark is primarily evaluated, it must be examined by a forensic odontologist to establish if the proportions and composition are within normal limits. In view of the fact that a huge percentage of individuals (85%) secrete the ABO blood groups in their saliva, swabbing the vicinity and a control area in another place on the body have to be concluded sooner than the remains is washed. The swabs, moistened with sterile distilled water, have to be allowed to air dry prior to their submission to a serological laboratory [8]. From the time when physical and biological data from a bite mark begins to get worse in a little while subsequent to the bite is inflicted, the forensic odontologist have to be well versed in the common principles of evidence collection [7]. The swabs taken from the bitemarks can also help in DNA Profiling of the perpetrator.

Preparing the Documents:

It is necessary for the forensic odontologist to complete the documents precisely so that no details should be missed. He should record a proof of the wound, together with suggestive, description comments that document the substantial appearance, colour, dimension and point of reference of the injury [9]. Even though there have been descriptions by means of fingerprint "dusting" methods, photography is the most important means of recording and preserving the bite mark in documenting the evidence. In view of the fact that the skin marks modify over the time period, photographs will give the most consistent resources of preserving the information. On the other hand, photographs comprise substantial natural restrictions, and there are precise needs
concerning the accurateness of reproduction. The fundamental technical hitches entail replicating a three-dimensional thing in a two-dimensional film and producing a representation with accurate colours and spatial relations. One of the important aspects in documenting is the extra-oral and intra-oral structures that have to be examined and important findings are noted on a dental chart. Particular consideration is determined on the importance of the broad dental physical condition, occlusion and mandibular articulation [10]. Photographs have to be taken by skilled photographers by means of both colour and black and white film by means of a negative size of 35 mm or larger [5,8,10]. In adding together to the customary films, several authors have suggested ultraviolet photography.12 The method involves irradiating the bite mark with a UV light source as well as exposing black and white film all the way through a UVA filter [12]. As soon as there are indentations in the skin, or to safeguard the three-dimensional character of the bitten area, impressions have to be engaged to fabricate stone models [13]. This method is prepared by fabricating custom impression trays and taking an impression of the bite mark and adjacent skin by means of a standard dental impression materials like vinyl polysiloxane or polyether. These impressions are then poured in dental stone to produce models.

Advanced and Specialized techniques

There are some advanced methods in recording the bite marks, like 3D image reconstruction, advanced imaging modalities and DNA analysis. The 3D method describes experiments with developing a semi-automated system to evaluate 3D dental models taken from bite mark impression descriptions left in the sight of the offence. Once the contours from the bite mark image and the 3-dimensional dental model are captured, the perfect configuration is designed by ruling the alteration which minimizes a distance measure. The most excellent counterpart is subsequently recognized by performing this association to a set of dental models [15].

The one more type of advanced method is from the body fluid traces recovered from a crime scene be able to potentially include DNA which, similar to fingerprints, has the maximum evidentiary importance. In the bite mark investigative ground, attempts to give an additional intention method of examination resulted in the effectiveness of saliva as a source of DNA. Other than saliva the DNA can be isolated from resources such as blood, semen, hair roots, tissue, teeth, and bone [16].

Conclusion

To record the bite marks from the victim, a forensic odontologist should require a certain degree of skills but should know and acknowledge their limitations. At the time of reporting on bite mark evidence, one has to generously disclose the intrinsic obstacles to correct the assessment and be appropriate with the bite mark authentication with reliable methodical ethics. In the midst of the planned realistic improvement of techniques next to systematic outline, bite mark data will be capable of strengthening and making big in its reverberations and coherent foundation to punish the real culprit in the court of law.
Conflict of Interest

None Declared

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