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Fatal Head Injuries in Road Traffic Accidents in and around Davangere: A Prospective Study

Manish K*, Jyothi N S**, Gurudatta S Pawar***, Vijayakumar B. Jatti****

Abstract

Background: Deaths due to fatal head injries in road traffic accidents is commonest occrrence in day to day public life as most people use automated vehicle as a means to travel. The present study aimed to know the nature of head injuries and the patterns of skull fractures in fatal road traffic accidents in this part of India. **Material & Methods:** The present study was conducted in the mortuary attached to District General Hospital, Davangere during July 2005 to June 2007. **Results:** Deaths due to RTA were reported in 408 cases. Among 408 cases of RTA, fracture of skull was observed in 164 cases (40.1%), maximum number of skull fracture occurred between the age group of 21 – 30 years (31.1%). The males were preponderantly (81.6%) over females. It was seen that maximum number of RTA was reported between 6.00 am to 12.00 pm (38.41%). Maximum victims of skull fractures succumbed to death on the spot (23.8%) and within 6 hours (24.3%). The motorcyclists were most common victims. Linear fracture was commonest (38.9%) pattern of fracture in RTA. **Conclusion:** Implementation of effective road safety measures reduces these fatalities.

Keywords: Road traffic accidents; Skull fracture; Intracranial Haemorrhage.

Introduction

Accident is defined as "an occurrence in a sequence of events, which usually produces unintended injury, death or property damage". A WHO advisory group in 1956 defined accident as an "unpremeditated event resulting in recognizable damage [1]. The alarming increase in morbidity and mortality owing to road traffic accidents (RTA) over the past few decades is a matter of great concern globally. Fatal road accidents have become a serious health hazard throughout the world by killing and crippling thousands of persons each year. Young and middle aged male is more likely to

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die from the injuries received in RTA than from any other cause and motor vehicle accident is a single most leading cause of death in them. The head is the vital organ and most vulnerable part of the body to receive an injury which is usually associated with fracture of skull. These injuries are common in RTA as well as in cases of domestic accidents. RTA account for major epidemiological problems in developing countries like India and others. This necessitates widening the spectrum of study with respect to head injury involving skull fractures in RTA.

Objectives

- To know the
- Incidence and patterns of skull fractures in cases of RTA.
- Co-relation of skull fractures with other intracranial lesions.
- Survival period of the deceased.

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Methodology

The present study "Incidence and patterns of skull fractures in fatal cases of accidents with special reference to Road Traffic Accidents" was a cross-sectional study. The study material comprised victims of RTA, autopsied in the autopsy block (mortuary) of Chigateri General Hospital Davangere, during 1st July 2005 to 30th June 2007 for a two year period. Detailed information regarding the deceased and various factors regarding the circumstances of the accident, like type of victim, type of offending vehicle, time of the accident and other relevant information were gathered from all possible sources like police records, hospital records and also by direct interrogation with the investigating officer, eye witnesses (if available), relatives and friends of the deceased. In addition to these X-ray, CT scan, MRI reports (whenever a patient admitted) were examined for the presence or absence of fracture before commencing the autopsy. In each case, a thorough external and internal examination was conducted using standard autopsy techniques. The data thus obtained was recorded and analysed later. The age groups of victims were categorized in an interval of 10 years. The cases were divided into 4 time slots as to the time of accident i.e. morning (6.00 am to 12 noon), afternoon (12.00 pm to 6.00pm), evening (6.00 pm to 12 midnight) and night (12.00 am to 6.00 am).

The victims were categorized into pedestrian, pedal cyclist, motorcyclist, occupant of a motor vehicle and others. The offending vehicles were divided into pedal cycle, motorcycle, motor vehicle and others. After recording the history and details of the accidental death, external examination was done and injuries were noted. Scalp injuries were also noted. Fractures of the skull and intracranial haemorrhages were studied.

Results

The present study was conducted during the period of July 2005 to June 2007. Deaths due to

RTA were reported in 408 cases. Among 408 cases of RTA, the fracture of the skull was observed in 164 cases (40.1%), maximum

Table 1: Age wise distribution of victims

Age group	RTA
0 - 10	7 (4.2%)
11 – 20	15 (9.1%)
21-30	52 (31.7%)
31-40	37 (22.5%)
41-50	29 (17.6%)
51-60	13 (7.9%)
61 – 70	10 (6.0%)
71-80	1 (0.6%)

number of skull fracture occurred between the age group of 21 – 30 years (31.1%) (Table-1). There was preponderance of males (81.6%) over females.

The graph 1 & 2 shows different type victims/vehicles involved in RTA. It was observed that the motor cyclists formed the major part of victims of skull fractures (46.3%),



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followed by pedestrians (33.5%) and cyclist accounts about 4.9% of cases. The other vehicles like bullock carts, auto rickshaws, road rollers and etc accounted for 6.7% of RTA cases studied.

It was seen that maximum number of RTA were reported between 6.00 am to 12.00 pm (38.41%). Maximum victims of skull fractures succumbed to death on spot (23.8%) and within

Γal	ble	2:	Survi	ival	peri	iod	of	the	victims	5

Survival period	RTA
Spot death	39 (23.8%)
0-6 hrs	40 (24.3%)
6 – 24 hrs	30 (18.2%)
1 – 5 days	32 (19.55%)
>5 days	23 (14%)

6 hours (24.3%) (Table-2).

Linear fracture (38.8%) was the commonest fracture followed by Communited fracture (27.7%) and depressed fracture (11.1%). Fracture base of the skull was seen in 30 cases (15.1%). The temporal bone (48.1%) was commonest bone involved in skull fracture followed by parietal bone (42%). Unilateral

Table 3: Pattern of skull fractures in accident victims

Type of accidents	Linear	Depressed	Communited	Base	Sutural
DTA	77	22	55	30	14
KIA	(38.8%)	(11.1%)	(27.7%)	(15.1%)	(7.0%)
-					

fractures of skull were more common than bilateral skull fractures (Table 3).

Table 4: Sexwise pattern of skull fractures

		5	Skull Fractures		
Sex	Linear	Depressed	Comminuted	Base	Sutural
Male	67 (37.2%)	31(17.2%)	43 (23.9%)	29 (16.1%)	10 (5%)
Female	16 (38%)	5 (11.9%)	12 (28.6%)	5 (11.9%)	4 (9.5%)

It is observed that there was no significant difference in the pattern of skull fractures amongst the male and female (Table 4).

Discussion

The results of our study on the pattern of skull fracture due to RTA were analysed and compared with other studies. Total 454 cases of death due to accidents were autopsied at Chigateri hospital mortuary during the period, July 2005 to June 2007. Deaths due to RTA were reported in 408 cases. Among 408 cases of RTA, fracture skull was observed in 164 cases (40.1%) [2-3]. Maximum number of skull fractures occurred in the age group 21 – 30 (31.7%) followed by age group 31 – 40 (22.5%) [3, 4], the reason being that young adults are prime bread earners of the family and remain outdoors during most of the day.

In our study we observed that there is a preponderance of males (82.3%) as compared to females (17.7%) [2, 3,5,7] as male population is involved in most of the outdoor activities. Maximum number of RTA was reported between 6.00 AM to 12 PM (38.41%) followed by time interval 6 PM to 12 AM (28%). Maximum number of accidents in the morning hours [6,7] is probably due to heavy traffic and urgency to reach work place, inadequate traffic control.

In our study it was observed that altogether 25.8% of the victims had succumbed within 6 hours [7,8], followed by 21.6% of victims who died on the spot. The period of survival has not shown any improvement despite the advancement of medical facilities due to inadequate network of hospitals. It was observed that motorcyclists accounted for 46.3%, [6,9] formed the major part of victims of skull fractures followed by pedestrians (31.7%).

A recent increase in availability of powerful motorcycles, rash and negligent driving by the younger population might have caused the increase in number of motorcyclist fatalities. Moreover there also increases in the incidence of drunken driving among them. In our study it was observed that heavy vehicles [10] particularly trucks were the common offending vehicle in 47.5% of victims and bus in 28.6% followed by tempo tracks in 5.4%. Involvement of heavy vehicles in accidents can be attributed to their high speed, congested roads, fatigability, intoxication etc.

In our study we observed that majority of skull fractures due to accident cases were associated with lacerations [4, 11] (46.8%) followed by contusions (32.1%). A linear

fracture (38.8%) was the commonest [7,12], followed by comminuted fracture (27.7%) in deaths due to RTA. In the present study it was observed that vault fractures were commoner than the base of the skull. The temporal bone (48.1%) [13] was the commonest bone to fracture followed by parietal bone (42%).

In our study it was observed that linear fracture [7, 11,12] was commoner in the age group 21 – 30 years, i.e. 24 cases followed by comminuted fracture is 21 cases and SAH [11,12] was found in 39.6% of victims, followed by SDH in 29.3%. Similar results were observed in the study conducted by Yavuz S. In victims of RTA, skull fracture was associated with mainly thoracic injury (31.6%). These results were in accordance with the study conducted by Singh H [6], Srivasthsava AK [9], Scalea T [14] & Sanjeev L [15].

Conclusion

The aim of this study was to know the incidence and patterns of skull fractures in RTA, to co-relate skull fractures with other intracranial lesions and also to know the period of survival of the victims. A sum total of 408 cases of skull fatal RTA deaths was studied, skull fracture were seen in about 40.1% cases. The majority of the victims belonged to the male population in the age group of 21-40 yrs. Most of the victims sustained accidents during morning hours and most of them died on the spot or within 6 hours after the accident. Motorcyclists were commonest victims, with heavy vehicles (trucks and buses) being the major offenders. Scalp laceration was commonly associated with skull fractures and in about ten cases showed skull fractures without any external injury to scalp. Fissure or linear fracture was the commonest fracture. In vault fractures, temporal bone was commonest bone involved and in fracture base of skull, middle cranial fossa was commonest site. In general the commonest intracranial haemorrhage was SAH. The thoracic injuries were commonest injuries to be associated with skull fractures.

Suggestions and recommendations

Reduce exposure to road traffic

- Plan communities so that people need not travel long distances every day.
- Plan road networks so that different types of traffic are channeled along different roads specifically designed for each type.
- Provide safe crossings and separate paths for pedestrians and cyclists.

Reduce the occurrence accidents

- Improve the visibility of roads, road signs during both day and night.
- Enforce laws that set maximum blood alcohol content levels for drivers.
- Control speed with traffic calming road design such as roundabouts and enforce speed limits consistently.

Reduce harm done when crashes occur

- Since seat belts are especially effective in motor vehicles travelling at low speeds. On urban roads, attention should be paid to the enforcement of seat belt laws on the roads.
- Helmets should be made compulsory for all riders of bicycles, motorcycles and mopeds.

Reduce post crash harm

- Detect and respond to crashes in a timely manner with good network systems.
- Provide appropriate first aid at the scenes of crashes, appropriate medical care in emergency rooms and appropriate post emergency medical care and rehabilitation [16].

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Prediction of Stature from Foot Length

Palimar Vikram*, Gupta Chandni**, Neena Priyadarshini A V***

Abstract

In medico-legal autopsies, establishing identity of dead is frequently essential. Estimation of stature from extremities could play a vital role in identification of dead bodies in forensic investigations. The measurements of foot have been used for determination of stature of an individual. The present study examines the association between stature and foot dimensions in post-mortem individual during autopsy. Foot length of 50 males and 50 females were taken independently on left and right side of each individual during the autopsy. The data were statistically analysed in order to evaluate the correlation between stature and foot length. Statistical analysis showed that in males and females were varied 16.9 % and 15% respectively in length of body. It can be explained by right foot length. Left foot length and stature relation was statistically insignificant.

Key words: Foot length; Stature; Estimation.

Introduction

Stature provides perception into several features of a population including nutrition, health and genetics. Stature is considered as one of the factors for individual identification and one of the 'big fours' of forensic anthropology. The stature of individual is an integral characteristic and its estimation considered to be a vital assessment in identification of unidentified human remains [1].

Adult height may be achieved any time in life from early teens to early twenties. However, it is usually reached during mid-teens for females and late-teens for males. For better precision, stature assessment may be attempted only after maturity [1]. There is a well-known

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connection between stature and different body parts like head, trunk, upper and lower extremities. This permits a forensic expert to estimate stature from different parts of body. With increasing occurrence of mass catastrophes, homicides, air plane crashes, train and road accidents etc., there is constant need of such studies which aid in recognizing the deceased from fragmentary and mutilated human remains. In such conditions, dimensions of hands and feet could provide good estimate about the height of a person [1].

The assessment of stature from extremities forms a vital part in identification process of dead persons. It has been perceived that measurements from lower extremity of the body have better association with body stature than those from the upper extremity. Assessment of stature from the foot measurements has significant forensic importance in developing descriptions of suspects from evidences at the scene of the crime and in corroborating height estimates from witnesses [2].

Ossification and maturation in foot occurs prior than long bones and therefore, during puberty age, stature could be more precisely

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anticipated from foot dimensions as compared to long bones [3].

The purpose of present study is to evaluate anthropometric association between measurements of feet with stature and to develop formulae to estimate stature from these measurements.

Materials and methods

In this study 50 males and 50 females bodies were studied who came for autopsy. Measurements of stature (S) of an individual and foot length (FL) in both right and left foot were taken using Vernier callipers. The data were statistically analysed in order to assess the relationship between stature and foot measurements and formulae were designed so that by measuring at the foot length it may be possible to predict the stature of the individual.

Landmarks involved in taking anthropometric measurements:

Stature

It is distance between vertex and heel of an individual.

Foot length

It is distance from most prominent part of back heel to most distal part of longest toe (2nd or 1st).

Results

The mean of all parameters for males and females was showed in table 1 and 2.

For Males 16.9% of variation in length of body could be explained by right foot length.

Prediction Equation:

Length of the body = $130.2+1.62 \times right$ foot length

Based on results of current investigations, only right foot length was significant with 0.003 regression coefficient for prediction regarding

Table 1: Mean of parameters for males

Parameters	Mean (cm)	Range
Stature	168	160-180
Right foot length	23.38	20.5-27
Left foot length	23.43	20-27

Table 2: Mean of parameters for females

Parameters	Mean (cm)	Range
Stature	153.86	137-161
Right foot length	20.61	19.5-24
Left foot length	20.67	19.5-24.5

Table 3: Comparison of our parameters in males with other studies

Mean Hilmi Ozden ⁽⁸⁾ 26.0±1.3 Gulsah Zeybeka(7) 25.6. Jaydip Sen(2) 23.96		Left toot length		Stature	
Hilmi Ozden ⁽⁸⁾ 26.0±1.3 Gulsah Zeybeka(7) 25.6. Jaydip Sen(2) 23.96	Range	Mean	Range	Mean	Range
Gulsah Zeybeka(7) 25.6. Jaydip Sen(2) 23.96	34 22.50-30.0	26.04 ± 1.36	23.0-30.0	174.39 ± 7.21	153.0-197.0
Jaydip Sen(2) 23.96	23.3-29.1	25.57	23.3-29.0	174.19	159.0- 191.0
	21.10-27.30	24.01	21.20-27.40	162.23	145.50-178.50
Mukta Rani(4) 23.348	19-26.5	23.46	19.9- 26.9	169.5	150.1-184.5
Jitender Kumar 25.445±1.	1.286 22.72-28.33	25.442±1.232	22.6-28.4	173.485 ± 6.206	161-186.2
Jakhar(3)					
Kewal Krishan(1) 24.72	21.8-28.0	24.70	21.7-28.6	168.24	147.6-183.6
Tanuj Kanchan(5) 26.3	21.5-30.0	26.3	23.2- 29.8	167.4	151.4- 180.6
Present study 23.38	20.5-27	23.43	20-27	168	160-180

Authors	Right foot length		Left foot leng	;th	Stature	
	Mean	Range	Mean	Range	Mean	Range
Hilmi Ozden ⁽⁸⁾	23.26 ± 1.07	20.50-26.50	23.30 ± 1.07	20.50-26.80	160.94± 6.31	142-179
Gulsah Zeybeka(7)	23.046	20.0-25.6	23.07	19.2- 25.6	161.69	148-176
Jaydip Sen(2)	22.23	19.70-24.90	22.27	19.80-25.10	149.53	133.50-169.60
Mukta Rani(4)	20.599	17.7-24.5	20.691	17.8-24.6	159.519	148.0-173.0
Jitender Kumar	23.089 ±.948	20.80-25.35	$21.400 \pm .927$	20.58-22.22	159.045±5.067	146.5-166.7
Jakhar(3)						
Kewal Krishan(1)	22.65	20.4-25.4	22.60	20.4-24.9	155.72	140.7-169.5
Tanuj Kanchan(5)	23.8	21.1- 28.1	23.8	21.3 - 28.1	159.5	143.1- 171.0
Present study	20.61	19.5-24	20.67	19.5-24.5	153.86	137-161

Table 4: Comparison of our parameters in females with other studies

stature of an individual. However, left foot length was not show the relation with stature of an individual.

For Females 15% of variation in the length of body could be explained by right foot length.

Prediction Equation

Length of the body = $104.6+2.4 \times right$ foot length

According to results of current study only right foot length was significant with 0.005 regression coefficient for prediction of stature of an individual. However, left foot length was not show the relation with stature of an individual.

Discussion

In medico-legal autopsies, establishing individual identity of victims is frequently required. Assessment of stature from extremities and their parts could play a vital role in recognizing dead in forensic investigations.

In present study, mean value and range of all parameters for males were similar to Kewal Krishan & Sharma (2007) [1], Jitender Kumar Jakhar [3], Mukta Rani et al (2011) [4] studies which studied living individuals. However, current investigations were performed in dead bodies during autopsy. In present study the mean value and range of all parameters for females were not similar to the study done by others may be due to racial differences.

Bilateral differences in foot dimensions (cm) among males and females in present study –

were 0.05cm and -0.06, respectively. However, Tanuj Kanchan [5] and Kewal Krishan [1] studies were showed, it was -0.028, 0.029 (male) and 0.016, 0.042 (female).

Based on results of current study it could conclude that only right foot length is significant for prediction of stature of an individual. The regression coefficient was 0.005. Left foot length showed no relation with the stature of an individual. And the formula to find the stature from foot length.

Males

Length of the body = $130.2+1.62 \times right$ foot length

Females

Length of the body = $104.6+2.4 \times right$ foot length

While Tanuj Kanchan [5] created the formulae as

Males

Stature- 93.269 + 2.819(RFL), Stature- 90.275 + 2.930(LFL)

Females

Stature- 103.270 + 2.365(RFL), Stature- 105.200 + 2.287(LFL)

Kewal Krishan [1] created the formula as

Males

S = 68.085 + 4.054 FL, Females -S = 71.941 + 3.703 FL

Jitender Kumar et al [3] created the formula as

Males

S=82.597+ 3.572FL, Female- S= 65.406+4.057 FL

Mukta Rani et al (2011) [4] created the formula as

Males

Stature: 98.320 + 3.050 FLRT, Stature: 97.279 + 3.080 FLLT

Females

Stature: 90.207 + 3.374 FLRT, Stature = 91. 109 + 3.309 FLLT

Jaydip Sen [2] created the formula as

Males

Stature

83.518 + 3.282(FL), Female stature- 67.009 + 3.707(FL)

Agnihotri [6] reported that right foot length could explain about 77% variations in stature. In contrast, current findings showed that, for males, 16.9% variation in length of body could be explained by right foot length while for females 15% variation in length of body explained by right foot length. On the other hand, Jakhar [3] conclude in their study that best correlation with stature was left foot length in all subjects.

Krishan [1] was observed that highest correlation coefficient between stature and foot length with lowest SEE (standard error of estimate). This indicated that foot length were able to provide highest reliability and accuracy in estimating stature of an unknown individual. This may be attributed to the fact that foot is anatomically involved in stature of a person [1]. Other workers also found that foot length was a good parameter for predicting stature compared to foot breadth in both genders [2, 4, 7].

Conclusions

Statures are abundant and their importance lies in simplicity of measurement, applicability and precision in prediction [5]. In forensic analysis problems are being experienced in stature and gender assessment of bodies mutilated in mass devastation. Thus, to overcome these problems, new means are being developed. This study was devoted to the derivation of formulae for assessing stature from fragmentary remnants of foot whenever such a thing is recovered.

In present study, males were showed higher mean values in each anthropometric dimension than among females. Similar results were also observed in other studies [1,3,7]. Statistically significant differences may be attributed to the early maturity of girls than boys. Consequently, boys have also two more years of physical growth. Present investigations showed that stature was a significant parameter in determining partial identity of unidentified bodies and mutilated remnants.

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Gestational Age Estimation using Femur Measurements

Anand Wadikar Suvarna V*, Dope Santoshkumar A**, Selukar Mangesh S***, Diwan CV****

Abstract

Background: Assessment of foetal femur growth parameters is one of the key - for estimation of foetal gestational age, and determination of population growth characteristics. The present study was to evaluate the relationships between the crown-rump length (CRL) and foetal femur growth parameters and the gestational age during the second and third trimesters.

Material & Method: Fifty six dead normal spontaneously delivered foetuses of second & third trimester of pregnancy were collected from the department of Obstetrics & Gynaecology, Government Medical College and Hospital, Aurangabad. A total of eight parametric variables were obtained from bilateral femora using a sliding calliper. Obtained data were statistically analyzed by unpaired t-test and Pearson correlation coefficients.

Result: There was no significant difference observed in growth patterns between the male and female during the second and third trimesters. A significant relationship between the studied foetal growth parameters and the gestational age was found. It appears that foetal CRL and femur growth parameters are accurate for the calculation of gestational age.

Key words: Forensic Anthropology; Foetuses femur collection; Growth parameters.

Introduction

The first two months of intrauterine life is termed as an embryo which become foetus from third month until birth. Foetal growth is defined as time dependent change in body dimensions that occurs throughout pregnancy. Estimation of foetal gestational age [1, 2, 3], and determination of population growth characteristics [4] were objectives of different investigations. The correlation of foetal growth with gestational age was depicted in Graphs [5]. However, most of published studies were used long bones and foetal femur length by ultrasonic measurements for assessment of

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gestational age. Concerning this subject, in the literature few parametric studies on femoral measurements in dead foetuses were found.

The purpose of this study was to evaluate the relationships between foetal crown-rump length, femur growth parameters and gestational age during second and third trimesters. The results 1ere compared with similar studies of other worker.

Aims and Objectives

1. To compare male and female foetal parameters.

2. To evaluate the relationships between the crown-rump length (CRL), foetal femur growth parameters and the gestational age during second and third trimesters.

3. To demonstrate the correlation of all these parameters with each other.

4. To compare the measurements with that of previous studies.

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5. To compare the results of Ultrasonic & Radiological studies with actual measurements of the aborted foetuses of various gestational age.

Materials & Methods:-

Fifty six normal spontaneously delivered dead foetuses of second and third trimesters were collected from Department of Obstetrics and Gynaecology, Government Medical College and Hospital, Aurangabad. At the time of abortion, foetal gestational age was between 20 and 34 week. There were 28 foetuses of male and female each. Each sex group includes 18 second trimester and 10 third trimester foetus. Twins foetuses with gross anomalies were rejected. All specimens used in present study were fixed with 10% formalin solution by immersion and dissected them as early as possible.

In order to view, both sides of foetal femora, a fine dissection in front of thigh was performed. The soft tissues were removed from their joining acetabular cavities. Upper end and lower end of femur was made free from tibia and fibula. In addition to crown-rump length, total eight parametric variables were obtained from head, neck, shaft and distal end of bilateral femora using a milimetric sliding calliper.

Measurements were designed as follows:

1. Crown-rump length (CRL) - Length from crown of head to most dependent part of trunk. (With the neck and back in a straight line)

2. Head transverse diameter (HTD) - Maximum antero-posteriar diameter of femur head.

3. Head vertical diameter (HVD) – Maximum vertical diameter of the femur head.

4. Neck Vertical Diameter (NVD) – Minimum diameter of femur neck in supero-inferior direction.

5. Greater Trochantre - Head Fovea Distance (GTHFD) – Distance from tip of greater trochantre to centre of head fovea.

6. Midshaft Transverse Diameter (MSTD) – Minimum transverse diameter at middle of femur shaft. (Perimeter at middle)

7. Femur Length (FL) – Distance from tip of greater trochantre to lower end of lateral condoyle.

8. Head Fovea – Medial Condoyle Length (HFMCL) – Distance from centre of head fovea to lower end of medial condoyle.

9. Distal Breadth (DB) – Maximum distance between two epicondoyles.

Data collected were applied for following statistical tests: - A] Mean. B] Standard Deviation. C] Unpaired t-Test. D] Correlation Coefficient (r). The SPSS-11 was used for statistical analysis. Unpaired t-Test was used to compare male and female foetal parameter. Pearson correlation coefficient were calculated and analyzed to determine the relationships between foetal femur parameter, CRL and GA (wk).

Fig 1: Anterior view of femur



Fig 2: Measurement of femur length



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Results

Comparative results of investigation in between male and female were recorded in Tables 1 and 2. Results were shown no significant differences in growth patterns between male and female during second and third trimesters as P > 0.05.

Table 1: Means, standard deviations, t and p values for femur parameters - gender comparative results of the second trimester foetuses (mm)

Parameters Females		Males	t	Р
HTD	10.30 ± 1.56	10.61±1.59	0.352	0.731
HVD	10.20 ± 1.48	11.05 ± 1.77	0.911	0.380
NVD	10.20 ± 1.35	10.55 ± 1.50	0.437	0.670
GTHFD	11.60 ± 1.85	12.00 ± 1.67	0.413	0.630
MSTD	05.10 ± 0.22	05.38 ± 0.78	0.790	0.440
FL	60.50 ± 4.84	64.05 ± 6.53	1.000	0.310
HFMCL	57.90 ± 4.64	61.33 ± 6.28	1.000	0.300
DB	16.50 ± 2.17	17.66±2.78	0.800	0.430

Table 2: Means, standard deviations, t and p values for the femur parameters- gender comparative results of the third trimester foetuses (mm)

Parameters	Females	Males	t	Р
HTD	18.00 ± 04.01	17.7 ± 4.17	0.137	0.893
HVD	18.00 ± 03.80	17.2 ± 4.32	0.375	0.713
NVD	18.77 ± 03.83	17.9 ± 4.14	0.412	0.687
GTHFD	19.00 ± 03.89	18.2 ± 4.48	0.364	0.721
MSTD	05.95 ± 01.61	07.1 ± 1.14	1.410	0.178
FL	80.68 ± 14.33	83.7 ± 11.7	0.396	0.698
HFMCL	77.50 ± 13.98	81.1 ± 13.0	0.487	0.634
DB	22.54 ± 03.91	24.5 ± 4.01	0.919	0.391

Therefore, data of both male and female in second and third trimester were combined. In present study, means of linear measurements at 20 and 34 weeks of gestation and approximate growth averages of measured parameters per week were shown in Table 3. A comparison of these results showed that there was a variable rate of increased in linear growth.

Table 3: Values of approximate growth average of all growth parameters (mm)

Parameters			Average Growth	
	Mean at 20 Week	Mean at 34 Week	Difference	Per Week (mm)
HTD	10.90	21.62	10.72	0.76
HVD	11.50	21.00	09.50	0.67
NVD	09.75	22.00	12.25	0.87
GTHFD	10.58	23.00	12.42	0.88
MSTD	05.00	08.12	03.12	0.22
FL	58.50	95.75	37.25	2.66
HFMCL	55.66	92.38	36.72	2.62
DB	15.33	27.37	12.04	0.86

Mean increments in linear growth of FL and HFMCL were 37.25 mm and 36.72 mm, respectively during 14 weeks of gestational period. In FL and HFMCL growth averages were 2.66 mm/week and 2.62 mm/week, respectively. Other measurements were exhibited variable growth averages for example, in proximal epiphysis, GTHFD and HTD were 0.88 mm/week and 0.76 mm/week, respectively. In distal epiphysis, growth average in DB was 0.86 mm/week. Statistical comparisons of correlations coefficients for all measured parameters were summarized in Table 4. All correlations were significant at P < 0.001 level.

The CRL was shown highly significant correlations with GA (r = 0.881), with HFMCL (r = 0.857), and with FL (r = 0.842). Highly significant correlations were also found between HFMCL and FL (r = 0.995). The GA was found to be highly correlated with both HFMCL (r = 0.818) and FL (r = 0.804). All other measurements in Table 4 were shown variable degrees of significant associations between their values.

	DB	HFMCL	FL	MSTD	GTHFD	NVD	HVD	HTD	GA(wks)
CRL	0.857	0.857	0.842	0.790	0.842	0.850	0.860	0.849	0.881
GA(wks)	0.797	0.818	0.804	0.644	0.800	0.855	0.805	0.817	
HTD	0.908	0.925	0.936	0.705	0.972	0.985	0,986		
HVD	0.892	0.910	0.919	0.696	0.961	0.971			
NVD	0.900	0.924	0.930	0.664	0.975				
GTHFD	0.912	0.924	0.934	0.688					
MSTD	0.851	0.834	0.824						
FL	0.970	0.995							
HFMCL	0.970								

 Table 4: Correlation coefficients (r) between crown-rump length and femur parameters and with the gestational age (week)

Discussion

In present study, high correlations between femoral parameters and GA were studied. Results indicated that growth was increased in all of evaluated growth parameters (Table 4). The significant correlations of GA with FL (r =0.804) and CRL (r = 0.881) indicate that in addition to CRL, foetal femur length can be considered one of the estimators of gestational age. Taner Ziylan et al (2003) [6] were evaluated relationships between foetal crown-rump length, foetal femur growth parameters and gestational age during second and third trimesters. Their study was reported the significant correlations of GA with FL (r =0.905) and CRL (r = 0.997). Shalev et al. (1985) [7] study were also reported correlation coefficients of GA with FL (r = 0.989).

Parameters	Taner Ziylan et al [6]	Present Study
/Growth Avg. per Wk	(Turkish Population)	(Indian Population)
HTD	0.37	0.76
HVD	0.52	0.67
NVD	0.26	0.87
GTHFD	0.51	0.88
MSTD	0.16	0.22
FL	2.21	2.66
HFMCL	2.17	2.62
DB	0.64	0.86

Table	5: Co	mparative	values	of the	approx	kimate g	growth	average	per v	veek
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The differences in above values are population specific and the foetal femur parameters were comparatively less in Turkish population.

Measurement of foetal parameters by ultrasonography has an important role in calculating gestational age, foetal maturity and growth pattern. It helps in prognosis of child after birth. It provides an idea about rate and pattern of normal or abnormal growth.

GA in Wk	Ultrasound		Radiological	Morphometric (Present Study)	
	Hadlock ^[8]	Merz ^[9]	Rajan ^[10]	Zeba Khan ^[11]	、 J,
20	32	31	31	29.33	58.5
22	38	36	36	-	64.0
24	43	42	42	42	69.5
26	48	48	47	-	74.5
28	52	53	51	50	80.7
30	57	56	55	-	85.5
32	62	61	60	60.75	90.0
34	66	66	63	-	95.7

Table 6: The methodological variation in measurement of femoral foetal length

Yeh et al.(1982) [3] were studied relationship of femur length to GA by ultrasonography. They suggested that there was a strong correlation between femur length and GA. Likewise, Queenan et al.(1982) [12] stated that with ultrasonic determination of femur length, gestational age can be calculated and determined. Regarding current study, it was believed that published data different largely due to methodological differences. As expected, differences between current findings and earlier published data, involving ultrasound measurements of FL could easily distinguished due to differences in evaluation methods. The ultrasonic evaluations of FL were in fact carried out on ossified femur diaphysis and not on entire length of femur including proximal and distal epiphyses as they undergo postnatal ossification. Radiological study by Khan et al (2006) [11], Fazekas and Kosa (1978) [13], Warren et al (1999) [14] shows differences with present study due to diaphyseal lengths.

Conclusions

This study was based on CRL, foetal femur parameters & GA (wk). Cross sectional study was carried out in total of thirty two aborted male and female foetuses varying from normal, spontaneously delivered , dead foetuses of second and third trimesters were collected from 20 to34 wks of gestation at Department of Anatomy , Government Medical College and Hospital, Aurangabad. All parameters were analyzed statistically. Study concludes the fallowing points.

- 1. Study showed no significant differences in growth patterns between male & female foetuses during second and third trimester.
- In present study, strong associations of different femoral growth parameters CRL and GA show importance of these foetal measurements in assessment of GA, and it might be widely applicable in forensic cases and for investigation purposes.
- 3. Accurate linear measurements of foetus allow a more complete profile of foetus and add a new dimension to measurement of its growth,
- 4. Methodological & Population specific differences seen in ultrasound, radiological and morphometric studies.

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Comparison of Humerus and Femur with Respect to Location and Number of Nutrient Foramina

Pradeep Bokariya*, Deepali Gudadhe **, Ruchi Kothari ***, PN Murkey****, MR Shende*****

Abstract

Background: Physical anthropology provides scientific method and technique for taking various measurements in different geographic regions and races.

Aims & Objectives: The study was aimed at determining measurements for obtainingforaminal index for both femur and humerus.

Material & Methods: In this study 80 (44 right and 36 left) intact human adult femora and 60 (36 right and 24 left) adult human humerie were obtained from teaching skeletal collections at Department of Anatomy, Mahatma Gandhi Institute of Medical Sciences, Sevagram. A hand lens, osteometric board and measuring tape were used for this purpose.

Results: Foraminal index was between 33 to 62% for left femur when calculated from proximal end and between 31 to 61% for right femur. The foraminal index was between 40 to 64% for left humerus when calculated from proximal end and between 45 to 64% for right humerus.

Conclusion: The findings observed in this investigation have immense utility for medico legal experts. The details of data obtained with relevant review of literature were discussed.

Keywords: Physical anthropology, Femur, Humerus, Nutrient Foramen, Foraminal index.

Introduction

The nutrient foramen of bone is site through which nutrient artery enters to supply nourishment to bone. The location and number of foramina remains is non constant feature in long bones. Morphology and statistical analysis of femoral and humeral anthropometry among different populations reveals a great degree of variation with respect to nutrient foramina [1, 2]. The femur and humerus are complex anatomic units in human. Thus an anthropometric study was devised to see the

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location and number of nutrient foramina in them.

Objectives

Many studies have shown the location and position of foramina in humerus and femur bones individually [1, 2]. However, there are very less study available where comparison of both is being shown as far as data of central Indian population is concerned. Thus present study was conducted to compare humerus and femur with respect to nutrient foramina.

Material and methods

In this study 80 (44 right and 36 left) intact human adult femora and 60 (36 right and 24 left) adult human humerie were obtained from teaching skeletal collections at Department of Anatomy, Mahatma Gandhi Institute of

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Medical Sciences (MGIMS), Sevagram. The number of nutrient foramina with their location and direction in respect to proximal end of femur and humerus on both sides were studied with aid of hand lens, osteometric board and measuring tape. Total length of humerus was also noted as projective distance between highest point of humerus head and deepest point of capitulum of humerus [3].

Results

The following observations were found to conclude the results of study.

Location of foramina

The foraminal index was noted with respect to proximal end. The observed foraminal index and total length of femur and humerus bones in both sides were summarized in Table I. Results indicated that difference between right and left femur was statistically insignificant. However, left femur has shown higher values as compared to right counterpart. Foraminal index was between 33 to 62% for left femur when calculated from proximal end and between 31 to 61% for right femur. The foraminal index was between 40 to 64% for left humerus from proximal end while for right humerus showed index between 45 to 64%. The statistical analysis of foraminal indices was also insignificant but comparatively lower location of humerus of both sides as seen in femur.

Direction of foramina

The direction of nutrient foramina was not show deviation from normal anatomical feature even in single case throughout experimental phase. The foramina was directed downward in humerus and upward in femur.

Number of foramina

The respective frequency of number of foramina was shown in Table II. The number of foramina was showed remarkable difference between two bones. Statistical analysis was also proven the significant difference between two long bones on both sides. Only humerus bone was shown 3 foramina. However, majority of bones were possessed single foramina. Likewise, number of nutrient foramina was increased in frequency of double, single and triple foramina for left femur and single, double and triple foramina per bone at right femur.

Table I: Showing Foraminal indices and total length for both humerus and femur andcomparative account of two is also shown

	Fer	nur	Hun	nerus					
Side	Left	Right	Left	Right					
Foraminal Index	33 to 62%	31 to 61%	40 to 64%	45 to 64%					
Total Length (cms)	42.95 ± 1.67	42.69 ± 1.94	30.71 ± 1.27	31.29 ± 1.82					
	p>0.05, Non Significant								

Table II: Showing number of nutrient foramina seen in femur and humerus of both sides

S. No.	Number of	Left Femur	Right Femur	Left Humerus	Right Humerus
	Foramina		-		
1.	Single	41.67%	50%	79.17%	86.11%
2.	Double	52.79%	43.18%	16.67%	13.89%
3.	Triple	5.6%	6.81%	4.17%	0 %
p<0.05	Statistically Statistical Statisticae Statisticae Statisticae Statisticae Statisticae Stat	ignificant			

Discussion

In the present investigations, anthropometry of two different long bones were revealed slight variations which were likely to be result of compounding factors such as nature of work, mode of life, metabolic status, continuous modifications. It may affect the characteristics of man and effects of civilization on composition of human body in both positive and negative ways.

None of femora in present study was shown more than three foramina which correspond to earlier work [2, 4, 5]. However, few workers were also reported even 4 foramina [2]. Considering this fact, there is important significance in number of foramina on humerus and femur. It can be of immense utility in medicolegal cases where only part of bone is found. In many cases such as excavation, burning etc.; it is always an important challenge for experts to find identification of bones. The correct identification may further solve many mysteries pertaining to identification of diseased victim. The present study was an effort that could help us in determination of sex from bones in absence of any records.

Conclusion

Current findings may be having immense utility for medicolegal experts. These

observations can be utilized in cases of exhumation and unidentified remains of bones. The femur and humerus have been studied successfully by physical anthropologists for many years. Incorporation of findings from this study could be uttermost utility for forensic anthropologist. This study was also relevant to fracture treatment and findings could be useful in intramedullary reaming, nailing of long bone, correction of fractures particularly in weight bearing femur and humerus.

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A Study on Tobacco Abuse among the Rural Population of Hebbal Village

Singh Madhavi L.H *, Singh H.K.G.**

Abstract

Background: Tobacco use is widely regarded as the most preventable cause of death and disease among adults. Materials & Method: A cross-sectional community based study was conducted among 155 tobacco consumers in the rural community of New-Hebbal village of Gulbarga district to know the factors responsible for initiating tobacco abuse and its impact on health. The pre designed and pre-tested pro-forma was used to collect the data. Results: The study showed that the highest prevalence of Tobacco abuse in its all forms was in illiterate people (71.62%); among labourers (50.49%); in the age group 31-50 years (47.10%) and in farmers (33.54%). A smokeless form of tobacco was consumed more in the form of Khaini (25.81%) and smoked form as Beedi (40.00%). Among 80% of the population studied, ignorance about hazardous health effect of tobacco usage was noted. Initiation of tobacco abuse was observed in adolescent age group (74.19%). Other prominent factors were peer pressure (56.13%) and pleasurable activity (31.62%). The most common complication was periodontal disease (50.96%) followed by acidity (30.33%). About 41.29 % of the population had tried to quit tobacco due to health complications. Restlessness (28.38%) & irritability (27.75%) were a prominent withdrawal symptom. Conclusion: Hence, effective intervention should be directed towards adolescent age to impart knowledge regarding the harmful consequences of tobacco abuse.

Key words: Tobacco abuse; Khaini; Beedi.

Introduction

Tobacco abuse is most extensively distributed in India. However, there are significant variations in tobacco types and using techniques. According to World Health Organisation (WHO), about 194 million men and 45 million women use tobacco regularly in smoked or smokeless forms in India [1]. Approximately 90% of Oral Cancers in South East Asia Region are linked to tobacco chewing & smoking [2]. WHO predicts that deaths related to tobaccos in India may exceed 1.5 million annually by 2020 [3]⁻ Tobacco consumption has been identified as the single

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most significant cause of preventable morbidity and premature death. Therefore, present investigations were carried out to know the pattern of sociodemographic factors associated with tobacco use and initiating tobacco abuse factors and its effect on health among rural population.

Material and Methods

To assess the influence of tobacco on health of tobacco abusers and factors responsible for initiating tobacco addiction, a population based cross-sectional study was conducted in field practice area of Rural Community Health Training Center, New-Hebbal Village in Gulbarga District. The study was performed in between 15th Sept. 2008 to 14th Dec. 2008 period. This area is under the Department of Community Medicine, M. R. Medical College Gulbarga. Rural Community Health Training

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Center, Hebbal has 15 villages under its jurisdiction. Among these villages, New-Hebbal village was selected for house to house survey. The population of the New - Hebbal village is about 1440. New-Hebbal village has better health education and health services by virtue of it being Community Health Training Center served daily by Health workers, Medico social workers, nursing student, interns & postgraduate students from the Department of Community Medicine, M R Medical College. 155 tobacco consumers (10.76%) and 450 non tobacco consumers (28.15%) i.e. total 605 persons (42.01%) were included from the people willing to participate in the study. More than 6 months old tobacco abusers such as smokers and smokeless form of tobacco (Guthka, Khaini etc.) were chosen and clinically examined. Clinical examination was carried to detect the impact of tobacco abuse on health scenario. Afterwards, guidance & advice regarding quitting and prevention were also explained to them. Subjects were interviewed using pre-structured, pre-tested and predesigned questionnaire and collected data by trained investigators. A pilot study was conducted using modified & validated questionnaire. All data entered on the questionnaire was tabulated and analysed for interpretation. Detailed information regarding the profile of the demographic characteristic of the study population, substance abuse history, abuse type, tobacco abuse initiation factors, abuse duration, influenced by whom, reason to quit, health problems and withdrawal symptoms etc. were collected during the course of interviews. Details of associated personal habits like alcohol consumption were also included in the investigation.

Results

In this study, 605 (42.01%) persons were participated as study population which comprised of 155 (10.76%) tobacco consumers and tobacco non-consumers 450 (28.15%). Maximum members of the study population were male (52.00%), illiterate (47.00%), farmer (31.00%), age group 10 to 20 years (27.00%).

They lived in nuclear families (53.00 %) with socioeconomic status (SES) IV (78.00%). Table 1 showed the socio-demographic characteristics of the study population. Results indicated that maximum number of tobacco consumers were males (74.19%), in the age group of 31 - 40 years (28.52%), Illiterates (71.62%), farmers (33.54%), labourers (50.49%), & in SES status IV (94.84%). Equal distribution of tobacco abusers was observed in nuclear type (48.39%) and joint type (50.60%) family. Minimum 14.19% tobacco abusers were found in the age group of 20-30 years. Abusers increased to maximum24. 52 % as age group was increased to 31-40 years. Afterwards it decreased to 22.58 % at age group of 41-50 years. In the age group of < 20 years, smoking habit was also less i.e. 16.77 %. Table 2 summarized the various other features in relation to tobacco consumption. It showed that 40.64% of tobacco abusers used smokeless form of tobacco while 59.36% was consumed smoking form of tobacco. Most prevalent smoking forms of tobacco were Beedi (40.00%) followed by Cigarette (19.35%). However, Khaini (25.81%) & Gutkha (14.84%) were common in smokeless form. Alcohol consumption (58.06%) was noticed as most common associated habit among tobacco abusers. Maximum tobacco addiction was started in adolescent age of <20 years among 74.19% of subjects followed by 21.29% subjects in the age group 20-40 years. The reason may be attributed to fact of high risk behaviour and vulnerability at adolescent age. Maximum numbers of study subject i.e. 27.75% were addicted for more than 20 years followed by 25.16% in 6-10 years. Equal numbers of study subjects 16.77% were abused tobacco since 1year and 16-20 years. Among various factors initiating tobacco habit; majority 56.13% persons were started tobacco abuse with their friends while 25.16% initiated by relatives. Maximum 31.62% of persons were started tobacco abuse for enjoyment, while 15.75% abused tobacco to get rid of mental tension. The reason for being tobacco abusers were desirous for experimentation and easy availability. 21.29% tobacco abusers claimed desire for experimentation while 23.87% were due to easy availability. Post abuse effects experienced by

the subject were as follows: 58.07% felt relaxed; 16.77% felt again in power; 14.19% felt fresh; 6.45% felt euphoric; and 6.45% developed an interest in work during or after tobacco chewing or smoking. Attempts to quit tobacco abuse were made by 69.68% subjects. A majority of abusers was trying to quit tobacco addiction mainly for health related problems (41.29%). However, 20% and 8.39% were due to hazardous consequences and cost, respectively. Only 20.00% were got positive attitude to quit tobacco abuse due to knowledge regarding the hazardous effects of tobacco use. 80% of abusers were not familiar about the hazardous effects of tobacco. Table 3 was depicted the health problem due to tobacco abuse. Periodontal diseases were prevalent and found in 50.96% subjects. However, others 30.33%, 6.45%, 6.45%, and 05.81% subjects were suffering from acidity, dryness of the mouth, loss of taste and oral ulcer, respectively. Withdrawal symptoms such as restlessness (28.38%), irritability (27.75%), nervousness (3.87%) and impaired concentration (05.16%) were experienced by 101 subjects. 34.84% subjects did not feel withdrawal manifestations after quit the tobacco abuse. However, these subjects were used less amount of tobacco.

Demographic	То	bacco	Tobacco non-	Total	?² value	P-value
characteristic	consur	ner n =115	consumer	n=605		
	No	o(%)	n=450 No (%)	No (%)		
Age 10 - 20	26	(16.77)	137(30.44)	163(26.94)	202.00	P>0.05
21 - 30	22	(14.19)	90(20.00)	112(18.51)		
31 - 40	38	(24.52)	75(16.66)	113(18.67)		
41 – 50	35	(22.58)	68(15.11)	103(17.02)		
50 - 60	18	(11.62)	42(9.33)	60(9.91)		
> 60	16	(10.32)	38(10.32)	54(8.92)		
Sex Male	115	(74.19)	200(44.44)	315(52.06)	26.12	P>0.05
Female	40	(25.81)	250(55.55)	290(47.93)		
Education Illiterate	111	(71.62)	275(38.88)	286(47.27)	217.89	P>0.05
Primary	17	(10.96)	140(31.11)	157(25.95)		
Secondary	14	(9.04)	75(16.66)	89(14.71)		
Higher Secondary	07	(4.51)	31(6.8)	38(6.28)		
Graduation	06	(3.87)	29(6.4)	35(5.7)		
Occupation Farmer	52	(33.54)	139 (30.88)	191(31.59)	235.42	P>0.05
Unemployed	16	(10.33)	104 (23.11)	120(19.83)		
Labourer	73	(50.49)	77 (17.11)	150(24.79)		
Business	04	(2.58)	106(23.55)	110(18.18)		
Skilled worker	10	(6.46)	24(5.33)	34(5.16)		
SES Status II	2	(1.29)	50 (11.11)	52(8.59)	208.5	P>0.05
III	6	(3.87)	80 (17.7)	86(14.21)		
IV	147	(94.84)	320(71.11)	467(77.19)		
Type of family Nuclear	75	(48,39)	250 (55.5)	325(53.71)	2.38	P>0.05
Joint	80	(51.60)	200 (44.4)	280(46.28)		

Table 1: Socio-demographic characteristics of the study population

Tobacco consumption		Number	%
Forms of tobacco	Gutk	.a 23	14.84
	Khai	ni 40	25.81
	Beed	i 62	40.00
	Ciga	rette 30	19.35
Alcohol	Yes	90	58.06
	No	65	41.94
Duration of consumption in ye	ars <1	4	2.58
	1 – 5	26	16.77
	6 – 1	0 39	25.16
	11 –	15 17	10.97
	16 – 1	20 26	16.77
	> 20	43	27.75
Reason for consumption	Enjoyme	nt 49	31.62
	Tension	21	13.55
	Experim	ent 33	21.29
	Easily av	ailable 37	23.87
	Others	15	9.67
Influenced by whom	Friende	97	56 12
minuenced by whom	Polativo	20	25.13
	Othors	, <u> </u>	20.10
	Oulers	29	10.71
Feeling experience after consur	nption Rel	axation 90	58.07
0 1	Fresh	22	14.19
	Interest i	n work 07	4.52
	Euphoria	a 10	6.45
	Gain in p	ower 26	16.77
Reason to quit	Health p	roblem 64	41.29
*	Hazardo	us 31	20.00
	Cost	13	8.39
	Others	47	30.32
Onset of tobacco consumption habit (age in yrs)			
-	< 20 years	115	74.19
	20 – 40 ye	ars 33	21.29
	> 40 years	07	04.51

Table 2: Various features in relation to tobacco consumption

Table 3: Health problems in tobacco users

Health Problem	Number	⁰⁄₀
Periodontal disease	79	50.96
Acidity	47	30.33
Oral ulcer	09	05.81
Dryness of mouth	10	06.45
Loss of taste	10	06.45
Withdrawal symptoms		
Nervousness	06	03.87
Restlessness	44	28.38
Irritability	43	27.75
Impaired concentration	08	05.16
No symptoms	54	34.84

Discussion

The present study is showing that, in 31-40 years age group, tobacco abusers were prevalent i.e. 24.52%. These were followed by 22.58% in the age group of 41-50 years. Bala et al. [4] in Gujarat state and Venkat et al. [5] in Delhi were also shown that tobacco consumption was maximum 43.31% in the age group of 26-35 years and 35-44 years, respectively. In the present study, most of tobacco abusers were male i.e. 115 (74.19%). However, only 40 (25.81%) abusers were found to be female. Similar results were reported by another researcher. Sinha et al. [6] showed that most smokers were males (74.10%) in rural area of Bihar. Bala et al. [4] also observed that tobacco habit were prevalent in men (61.89%) in Gujarat state. Maximum numbers of tobacco abusers were Illiterates (71.62%). Similar findings were also reported by Venkat et al. [5] in Delhi. They showed that education is the strongest predictor of smoking. 66.1% Illiterate men were 1.8 times more likely to be smokers than literate. However, Illiterate women were 3.7 times more susceptible to tobacco abuse. Bala et al. [4] also reported that tobacco use was high in illiterates (50.60%) in Gujarat state. Among occupational groups, tobacco consumption was more at farmers (33.54%) and labourers (50.49%). Likewise, Bala et al. [4] were reported in labourers and farmers (59.88%) Of Gujarat. Majority of tobacco abusers was associated with other abuses also such as alcoholic (58.06%), beedi smoker (40.00%) & use Khaini (25.81%). However, Sinha et al. [6] noted that 80% smokers were smoked beedi over the smokeless form of Khaini (57.1%) in rural area of Bihar. In contrast Narayan et al. [5] showed that 66.77% tobacco consumers were also consumed alcohol in Delhi. Similarly, Dhupdale et al. [7] were studied the prevalence and pattern of alcohol consumption in rural Goa. Their results were also shown that alcoholic subjects are 1.9 times more likely to use tobacco (34.8%) than non consumers.

Maximum 31.62% persons were started tobacco abuse for enjoyment while 15.75% used tobacco to get rid of mental tension. Desire for experimentation was reason amongst 21.29%. 23.87% of tobacco abusers were started because of easy availability. However, maximum 56.13% subjects were initiated tobacco in influence of friends. Bala et al. [4] were also shown in Gujarat state that the majority of the tobacco users were consumed tobacco to decrease mental tension and for enjoyment. Half of all men and one third of women were started tobacco use by imitating their friends. Only 40.29% subjects were tried to quit tobacco due to health reasons. Similar finding were reported by Bala et al. [4] in Gujarat state. They were showing majority 95% try to quit tobacco due to health reasons. Current findings also indicated that 56.96% study subjects were suffering from periodontal disease. Jagadeeshan et al. [8] were also reported periodontal diseases in 70.70% chewers.

Conclusion

This study revealed that the initiation of tobacco abuse is prevalent in adolescent age group as they are soft targets for high risk behaviour and lack of knowledge about effect of tobacco abuse.

Recommendations

Knowledge should be imparted regarding harmful effects of tobacco abuse which create awareness among smokers and passive smokers. This will help to quit Tobacco. Enforce bans on Tobacco advertisement, promotion and sponsorship. Statutory warnings like "smoking is injurious to health, should be highlighted on sachets and packets. Tobacco abuse should be monitored with preventive policies. The penalty should be followed strictly for smoke and spit in public places. Taxes should be raised on tobacco sale and devised strategies to intervene at the initiation level of tobacco abuse i. e. early adolescent age.

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Neglected Coin in Cricopharynx: A Rare Cause of Death

Hippargekar Prashant M*, Kachre R.V**

Abstract

Foreign body ingestion and its subsequent impaction are a common accident encountered in paediatric age group all over the world. A 2 year old girl was referred to SRTR Medical College Ambajogai with complains of stridor, difficulty in swallowing and fever for 8 days. The mother gave a doubtful history of ingestion of a 50 paise coin 20 days back. A tracheotomy was carried out and the patient started on higher antibiotics. The patient was coming out of anaesthesia well but she suffered with fatal cardiorespiratory arrest 4 hrs after admission. Post mortem examination revealed a foreign body affect the cricopharyngeal level with a lot of granulation and infection around it and bilateral pneumonitis. The cause of death was ascertained as septicaemia and pneumonia secondary to impacted foreign body at cricoparynx.

Keywords: Foreign body ingestion; Tracheotomy; Bilateral pneumonitis.

Introduction

Foreign body ingestion and its subsequent impaction are a common accident encountered in paediatric age group. Over 90% of ingested foreign bodies have uneventfully gone through gastrointestinal tract and affected mostly oesophagus [1]. Furthermore, 80% of foreign bodies in oesophagus are held up at cricopharynx on sites of pathological narrowing [2].

In children, coins are most common foreign bodies [3]. They exhibit acute symptoms like choking, excessive salivation, dysphagia or vomiting [1]. However, there are reports of longstanding asymptomatic metallic coins in oesophagus [4] and trachea [5].

The complications of foreign body on oesophagus arise in proportion to the duration

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of impaction [6] and removal attempt of via sharp objects [2]. Still outcome of patients with long duration foreign bodies is good [7].

Due to escaping detection, foreign bodies in the oesophagus for long time duration are reported in literature [8]. However, metallic coins and general cricopharyngeal foreign bodies could easily detect due to their radio opaque nature and symptoms of absolute dysphagia.

The fact, esophageal foreign bodies could not cause immediate life threat and pass down easily. This perception may lead to complacency. Death due to metallic coin impaction at cricopharynx is very rare. At most retained foreign bodies at cricopharynx may cause recurrent pneumonitis. Here, a rare case study of 2 year old child with a neglected foreign body (coin) at cricopharynx leads to cause of death was presented.

Case Report

A 2 year old girl was referred to SRTR Medical College Ambajogai with complains of stridor, difficulty in swallowing and fever for 8 days. The mother gave a doubtful history of ingestion of a 50 paisa coin 20 days back.

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At the time of admission, patient had moderate stridor and cyanosis. However, her general condition was very poor. Radiological examination was revealed a rounded radiopaque foreign body at cricopharynx. The patient was taken to Operation Theater and endoscopy performed under general anaesthesia. Several complications, like granulations, oedema and pus around the opening of esophageal and laryngeal were diagnosed. However, foreign body still not visualized so endoscopy was abandoned. Further, a tracheotomy was performed for coin visualization and given high antibiotics to patients. The patient was coming out well from anaesthesia but she had a fatal cardio respiratory arrest after 4 hours of admission. Post mortem examination was revealed a foreign body impacted at cricopharyngeal level with a lot of granulation and infection which lead to bilateral pneumonitis. The cause of death was ascertained as septicaemia and pneumonia secondary impacted to foreign body at cricoparynx.

Discussion

Oesophageal foreign bodies specially coins are most common and frequent occurrence [3]. Generally, they do not cause problems and the majority of them being expelled spontaneously when treated in time. However, complications arise due to shape (sharpness) of object [2] and duration of impaction [6].

Prognosis of untreated esophageal foreign bodies appears catastrophic on account of possible complications like ulceration, stricture, tracheooesophageal fistula, mediastinal abscess or penetration into a large blood vessel [9]. However, there are reports of incarcerated foreign bodies in oesophagus being treated successfully. The possible mode of presentation of long standing foreign bodies is chronic respiratory symptoms like stridor, wheezing and recurrent pneumonia [10]. Coin in oesophagus could be considered a safe foreign body even though some of complications like migration outside lumen present [8].

In the present case, parents gave a history of foreign body ingestion which leads to infection in lower respiratory tract. Primary consultant did not think appropriate to carry out at least cursory radiological examination. At last, the child was presented in very bad condition with severe respiratory distress and septicaemia at the SRTR Medical College, Ambajogai, India. In the presence of infection or signs of abscess formation, a foreign body can be removed after giving adequate antibiotics to prevent downward spread of infection [11]. With this intent, procedure was abandoned. However, the child died due to bilateral pneumonitis with addition of respiratory obstruction and septicaemia proven in autopsy.

Conclusion

A case study was presented here due to the rarity and severity of complications. In general, study provides a good outcome for patients with a foreign body in oesophagus. It was observed that chances of natural passage of a foreign body especially coin may induce several complacencies. Thus, in every case, suspected foreign body should be investigated clinically and radiologically to establish its presence. Otherwise, this leads to many unnecessary and unpreventable complications.

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Evaluation of Impact of Sensitization Workshop Regarding Medical, Ethical and Legal Aspects of Cardiopulmonary Resuscitation among Medical Students

Avachat Shubhada Sunil*, Chavan K D**, Sharma Panchsheel***, Phalke D.B.

Abstract

Cardiac or respiratory arrests are very common emergencies in adult group as well as in the neonatal period. These emergencies can be easily managed by knowledge and practice of resuscitation skills. Emergency physician requires knowledge and skills for cardiopulmonary resuscitation (CPR), basic and advanced life support. Many studies showed that CPR skills of medical graduates and junior physicians are not up to mark due to lack of training. Although, many medical colleges has been already included this in their curriculum but adequate emphasis is still not given on its practical aspects. An interventional study was conducted among third year medical students of Rural Medical College to assess their knowledge about some medical, ethical and legal aspects prior to intervention. The impact of sensitization workshop was analysed by applying appropriate statistical methods). It observed that only 19.8% students were having correct knowledge about the compression ventilation ratio. There was significant improvement in knowledge regarding indications of CPR after the sensitization workshop. The percentage was increased up to 80.2% after the workshop. Students did not have adequate Knowledge regarding legal and ethical aspects of CPR and significant improvement was observed from 22% to 66%.

It could conclude that knowledge regarding medical, legal and ethical aspects of CPR was not adequate among third year medical students. However, evaluation of the impact of sensitization workshop on CPR showed significant improvement.

Keywords: Cardiopulmonary Resuscitation CPR; Medical students.

Introduction

Cardiac and respiratory arrests are most common emergencies with grave consequences. The high mortality associated with these can be easily prevented most of times by very simple manoeuvre and skills. Cardiac or respiratory arrests are the most common emergencies in adult group and the neonatal period. These emergencies can be

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easily managed by knowledge and practice of resuscitation skills.

History indicates that resuscitation attempts were existed way back in time. Early records from Egyptian Mythology and Bible suggested that mouth-to-mouth and mouth-to-nose respiration were among earliest resuscitative efforts using artificial respiration [1,2]. Over time, resuscitation skills have evolved into a proper protocol, which involves cardiopulmonary resuscitation (CPR) commonly known as Basic Life Support (BLS).

Cardiopulmonary resuscitation (CPR) is an emergency medical procedure performed on a victim of cardiac or respiratory arrest and consists of chest compressions to maintain blood circulation along with artificial respiration. The purpose of CPR is to maintain blood circulation to the brain and heart which

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helps postponing tissue death and brain damage [3].

Emergency medicine is a recognized and well developed specialty in many developed countries like USA, Australia etc. However, this discipline is in the infancy stage in India. Very few hospitals have fully functional emergency medicine department.

Emergency Physician requires knowledge and skills of cardiopulmonary resuscitation, basic and advanced life support. There is an urgent need to develop a training program in emergency medicine for future faculty, residents and medical student's. The training should include cardiopulmonary resuscitation its indications, contraindications, basic and advanced life support [4].

Many studies show that CPR skills of medical graduates and junior physicians are up to mark due to lack of training [5]. Good training in cardiopulmonary resuscitation has long been a major focus for medical educationists. CPR training should be included in medical curriculum [6,7]. Many medical colleges included this topic in curriculum however adequate emphasis is not given.

The present study was conducted among third year medical students of Rural Medical College to assess their knowledge about some medical, ethical and legal aspects of CPR. After the assessment, workshop was arranged to provide basic information regarding CPR and its impact was evaluated.

Materials & Method

An interventional study was conducted among third year medical students of a rural medical college. The study was conducted from June 2010 to September 2010. Purposive sampling technique was used to select 100 medical students from third second M.B.B.S. These students had already completed one clinical posting of medicine, surgery including casualty posting and were supposed to be aware of the importance of CPR. The knowledge, regarding medical ethical aspects of CPR, among study participants was assessed to help of predefined questionnaire. The questionnaire included both open ended and multiple choice questions related to medical ethical, and legal aspects of CPR. Multiple choice questions were designed as per the guidelines mentioned in literature [8,9].

After analysing the information, sensitization workshop was arranged for participants. The workshop included various lectures delivered by resource persons from anaesthesia and other concerned departments via different communication modes such as demonstrations on simulation models, video clips etc. The impact of the workshop was evaluated using a same preworkshop questionnaire. The data from pre and post workshop questionnaire was tabulated and compared. Statistical analysis was performed by applying appropriate statistical methods like percentages, proportions, and tests of significance like Chi square test and standard error of difference between two proportions (z test).

Observations

In the present study, prior and after the workshop, knowledge regarding the concept, indications, technique, ethical aspects etc. of Cardiopulmonary Resuscitation was assessed among hundred medical students. The results were compared to find the impact of the workshop. As recorded in Table 1, there was significant improvement in knowledge of Cardiopulmonary Resuscitation after sensitization workshop. Cardiopulmonary Resuscitation is likely to be effective if commenced within 4-6 minutes. As revealed in Table 2, only 45% students knew this fact prior to workshop. However, 85% students were given a correct answer after the workshop. Difference between prior and after workshop knowledge was significant after applying Z test (Z=6. 5, p < 0.05). Only 19.8% students were having correct knowledge regarding compression-ventilation ratio. This percentage increased up to 80.2% after the workshop

Chest compression techniques and landmarks are different in infants, children and adults . Prior to the workshop only 29% and 32-38% students were having correct knowledge about landmark & technique, respectively. Significant improvement was observed after the workshop as seen in Table 2 and 3 and 66% and more than 70 % students gave correct answer, respectively. As shown in Table 4, knowledge regarding basic life support and an automated electric defibrillator was

Table 1: Knowledge regarding indications of CPR (n=100)

significantly increased among the students after the workshop.

In the present study, legal and ethical aspects of CPR were also tested. The opinion about the need of consent prior to CPR was asked. Surprisingly, 36 % students were told wrong opinion and consent should take. However, after workshop, percentage of students about the wrong opinion was declined significantly to 8% (Table 5).

Table 2: Knowledge regarding chest compression landmark

Knowledge	Pre workshop	Post workshop	Knowledge	Pre workshop	Post workshop
Adequate	83	93	Correct	29	66
Inadequate	17	07	Wrong	71	34
Total	100	100	Total	100	100
$C^{2} = 4.7.4$ f	- 1 m < 0.01 U:~1	altraionificant	7-565 06	0.05 significant	

 C^{2} =4.7 d.f. = 1 p < 0.01 Highly significant

Z= 5.65 p < 0.05 significant

Response	Pre intervention	Post intervention	
A) In Infants			
Correct	36%	72%	$X^2 = 26.09$
Incorrect	64%	28%	P<0.01 Significant
B) In children			
Correct	32%	70%	$X^2 = 28.9$
Incorrect	68%	30%	p<0.01 Significant
C) In Adults			
Correct	38%	76%	X ² = 29.46
Incorrect	62%	24 %	p<0.01 Significant

Table 3: Knowledge regarding chest compression technique

Table 4: Knowledge regarding basic life supports & AED

Response	Pre intervention	Post intervention	
1) About basic life support			Z=7.38
Correct	22%	68 %	p < 0.05
Incorrect	78%	32 %	Significant
Total	100	100	-
2) About AED			Z=3.25
Correct	74%	91%	p < 0.05
Incorrect	26%	09%	Significant
Total	100%	100%	-

Table 5: Knowledge regarding Ethical and legal aspects of CPR

	6	
Response	Pre intervention	Post intervention
Correct	64	92
Wrong	36	8

Z= 5.08 p< 0.05 Significant

A) Regarding consent

B) Regarding Medical negligence

Response	Pre intervention	Post intervention
Yes	22	68
No	78	32
7 7 00		

Z = 7.38 p < 0.05 Significant

Discussion

Various studies have reported that CPR training should be included in the medical curriculum. However, many medical colleges were not implemented this. To assess some medial and ethical aspects of CPR, an interventional study was conducted among 100 medical students.

Before commencing CPR, adequate knowledge regarding indications was necessary. In the present study, 83% students were known about CPR. It was noted number significantly increase to 91% after the workshop (p <0.01) (Table 1). Similar results were noted in Hassan & Zeba (2009) study. Significant numbers of students were aware of general idea of BLS/CPR which was assessed by correct responses. A large number of students were known about the abbreviation, purpose and importance of a manoeuvre [10]. They aware of the well known fact that cardiopulmonary resuscitation is likely to be effective if it commenced within 4-6 minutes after blood flow stops. Afterwards permanent brain cell damage could occur [11]. In this study, only 45% students knew this prior to workshop. It was increased up to 85% after the workshop. Significant improvement was observed in knowledge about chest compression technique and landmarks after the workshop (Table 2 and 3). As it is known that delay in initiation of basic

CPR & defibrillation after cardiac arrests are main reasons to reduce the chances of survival. Appropriate use of an automated electric defibrillator could improve chances of survival [12]. In the present study, significant improvement was noted in knowledge regarding basic life support and automated electric defibrillator (AED) after the workshop (Table 4). Izazdehfer and Sadaghat (2008) also mentioned that only 20 % interns had adequate knowledge about BLS while after post test it was increased to 53% [13]. Marcus et al (2009) shown that only 37% respondents had adequate knowledge about AED.

The issue of resuscitation raises fundamental ethical questions about autonomy (patient's wishes and choices), beneficence (appropriate decision making), nonmaleficience (harm avoidance) and justice (allocation of limited resources). Similarly, medico legal aspects of the CPR deal with issues such as competency of an individual in decision-making, standard processes of decision-making and dilemmas in instituting or withholding CPR [15]. The legal and ethical obligations are major factors for a medical practitioner to attend the emergency. Every doctor had a professional obligation to extend his services for protecting life [16]. Section 92 of IPC could offer legal immunity for a registered medical practitioner to proceed with appropriate treatment even without consent [17]. In this study, when the role of consent and medical negligence related to CPR was asked. Only 64% and 22 % students were answered correctly. However, after workshop significant improvement was observed.

Conclusions

From the study, it could conclude that knowledge regarding medical, legal and ethical aspects of CPR was not adequate among third year medical students prior to workshop. But sensitization workshop on CPR was showing significant improvement.

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