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Brief Communication

Roentgenologic Prospective Study of Union of Epiphyseal Centre of Medial End of Clavicle in Boys and Girls of Age Group 18–23 Years in Rajasthan

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ABSTRACT

Age in laymen's view is the time passed after birth and ageing is a continuous process in human as well as in all other living beings. The problems of age estimation in living/dead person are mostly encountered by police and it is a subject matter of great medico-legal and academic interest. Some work for accurate estimation of age has been done in this country, which exhibit differences in different parts of this country. This study includes radiological examination of clavicle of 100 individuals for the study of fusion of ossification centre of medial end of clavicle in the age group of 18–23 years of both sexes in RNT Medical College, Udaipur, Rajasthan.

Keywords: Age estimation, Medial end of clavicle, Epiphyseal union, Roentgenologic, Male, Female and Non union

INTRODUCTION

Age of individual can be determined from eruption of teeth, onset of menses, ossification of bones, attainment of particular height and weight, appearance of secondary sex characters, etc. Appearance and fusion of different ossification centre with this corresponding bone has been proved to be a very good and variable tool for age estimation. However countable differences are noticed in the appearance and fusion activities of ossification centres depending on race, geographic distribution and sex. The process of ossification may also be influenced by food habit, monal and metabolic disorders and physical activity. Generally speaking, ossification activities occur earlier in Indian population than in Western population. The activities are generally earlier in females than in males[9]. In India as far as adequate data for each area concerned are not available; Survey Committee (1964), reporting on medicolegal practice in India, had recommended to the government that the zone-wise study of the problem of determination of age may be encouraged. Those who have worked in India are Hepworth (1929) in Punjab, Lall and Nat (1934) in UP, Pillai (1936) in Madras, Galastaun[4] (1937) in Bengal, Basu and Basu (1938) in Bengal, Lall and Townsand (1939) in UP, Ledger and Wargon (1941), Narisimhan and Bhaskarmurti (1942), Mittal (1952) in UP, Bajaj (1957), Loomba SD[8] (1958), Gupta (1961), Sharma (1962) in UP, Franklin[3] (1962) in Maharashtra, Hassan and Narayan Dharau (1964), Ram Ji Das and Grewal (1965) in Punjab, Saxena (1969) in MP, Gupta BP (1969) in Sikar, Rajasthan, Yadav and Suri (1971) in UP[7], Das Gupta[5] (1974) in UP, and Kothari DR[7] (1974) in the Mewar region of Rajasthan.

MATERIAL AND METHODS

The study has been conducted on 100 subjects of Rajasthan at RNT Medical, Udaipur. The candidate selected for the study were in age group 18–23 years of either sex and belonging to different socio-economical, religions and educational status. Their age as stated by them was further confirmed from their birth certificate

or secondary certificate or school record duly verified by the head of institution. After clinical examination, each candidate was X-rayed for medial end of clavicle.

OBSERVATION

Table 1: Age and sex-wise distribution of cases

Age in years	No. of cases		Total	Percentage
	F	M		
18–19	6	5	11	11
19–20	8	10	18	18
20–21	16	14	30	30
21–22	14	13	27	27
22–23	4	6	10	10
23–24	2	2	4	4
Total	**50**	**50**	**100**	**100**

Table 2: Incidence of fusion of epiphyses in medial end of clavicle in female

Age group in years	No. of subjects studied	Non-fusion		Partial fusion		Fusion	
		No.	%	No.	%	No.	%
18–19	6	6	100	0	0.00	0	0.00
19–20	8	4	50.00	4	50.00	0	0.00
20–21	16	5	31.25	9	56.25	2	12.50
21–22	14	1	7.14	6	42.85	7	50.00
22–23	4	0	0.00	1	25.00	3	75.00
23–24	2	0	0.00	0	0.00	2	100

Table 2 shows that complete fusion of epiphysis of medial end of clavicle occurs in 75% of cases in age group 22–23 years in female subjects.

Table 3: Incidence of fusion of epiphyses in medical end of clavicle in male

Age group in years	No. of subjects studied	Non-fusion		Partial fusion		Fusion	
		No.	%	No.	%	No.	%
18–19	5	4	80.00	1	20.00	0	0.00
19–20	10	2	20.00	8	80.00	0	0.00
20–21	14	0	0.00	9	64.28	5	35.71
21–22	13	1	7.69	6	46.15	6	46.15
22–23	6	0	0.00	2	33.33	4	66.66
23–24	2	0	0.00	0	0.00	2	100

In age group 23–24 years, the male subject shows 100% fusion of epiphysis of medial end of clavicle.

DISCUSSION

Table 2 shows that epiphyses of medial end of clavicle in female is found fused in 75% cases at 22–23 years of age, which are similar to Flecker[2] (Australian) and consistent with figure of Jit and Kulharia[6].

Table 3 shows that fusion of epiphyses of medial end of clavicle occurs in males at the age of 23–24 years, which is 100% and which are again consistent with Jit and Kulharia[6] but earlier than Davies and Parson[1] of England. The centre of fusion for epiphyses of medial end of clavicle in my study shows that fusion in females occurs 1 year earlier than that in males. The age of fusion for various epiphyseal centres in the present study in both sexes is almost similar to Das Gupta[5] *et al*.

Epiphyses		Medial end of clavicle	
		A	F
Galastaun	F	14–16	20
	M	15–19	22
Flecker's Australian	F	21	22
	M	21	22
Davies and Parson England		17	25
Jit and Kulharia Punjab		17–19	18–25

CONCLUSION

The conclusion of the study is summarised as follows:

1. Medial end of clavicle fuses at age group 22–23 in females and 23–24 in males.
2. Fusion of epiphysis of medial end of clavicle occurs 1 year before in females than males, which is similar with the findings of other workers on the subject and is quite understandable taking in consideration of earlier onset of puberty in female.
3. In the study there have been cases whose degree of fusion on both sides are not equal so it is recommended that for age estimation both side X-ray should be done.

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