JECA

J. Expt. & Clin. Anat. 8(1): 17-19

Anthropometry of the PituitaryFossa in Normal Adult Ijaws of the Niger Delta in Nigeria

***A.I UDOAKA[1] AND D. E. BASSEY[2]**
[1]Department of Anatomy College of Health Sciences, University of Port Harcourt
[2]Department of Radiology College of Medical Sciences, University of Calabar

*Author for Correspondence

ABSTRACT

The pituitary fossa (Sella Turcica) has been studied by various workers in different populations and racial and regional variations of the normal sella noted. This study therefore was carried out to determine the radiological dimensions of the pituitary fossa in normal adult of the Ijaws of the Niger Delta region of Nigeria. A total of 440 normal radiographs of the lateral view of the skull comprising 220 males and 220 females were utilized. The radiographs were obtained randomly from the Radiology Departments of the University of Port Harcourt Teaching Hospital, the Braithwaite Memorial Specialist Hospital and Kaliya Specialist Diagnostics all in Port Harcourt Nigeria. The mean length of the sella was found to be 10.8 ± 1.7 mm while the mean depth was 8.2 ± 1.6 mm. The males had greater sella sizes than the females though not significant ($P > 0.05$). The sella size of the Ijaws when compared to the Caucasian values was lager though the difference was also not significant ($P > 0.05$). This finding will be useful as a reference guide for the sella of the Ijaw population in

Key word: Pituitary fossa (Sella Turcica), Ijaws Niger Delta, radiographs.

The pituitary fossa or sella turcica can be defined as the saddle like bony formation on the upper surface of the body of the sphenoid bone (Moore 1994). It is the osseous structure on which lies the pituitary gland located in the middle cranial fossa.

The sella has been an interest of study by various researchers. The shape and size of the sella was first studied by Camp in 1923 and 1924 at necropsy and from radiographs respectively. Other authors like Francis (1948), Acheson (1956) and Hass (1954) were amongst the early workers.Teal in 1977 studied the walls of the pituitary fossa while the volume and its development were studied by Chilton et al (1983), Davenport and Ranfoe (1940), Dichiro and Nelson (1962), and Underwood et al (1976). Most of these studies were done on the Caucasian population. Recently however the pituitary fossa was extensively studied by Akpuaka et al (2006) in a Nigerian population, using the Yoruba and the Igbo ethnic groups. In their study, the regional variation was noted, the Yorubas having significantly larger sella size. Silverman in his work in (1957) had set roentgen standards for the size of the pituitary fossa from infancy through adolescence. Plaut (1978) also noted anatomic variations of the pituitary fossa in his study. There are now accepted variations in the shape and size of the normal pituitary fossa.

Accessing the pituitary fossa in radiographs is of value to the radiologists due to the fact that it is one focal point where a diagnosis of raised intracranial pressure is made. Familiarity of the radiological anatomy of the sella is also essential as any change in its usual shape and size offers a clue to the condition of the pituitary gland and the possibility of a mass lesion within and around the sella.

The aim of this study therefore is to find out the dimensions of the pituitary fossa of the people of the Ijaws in the Southern part of Nigeria since to our knowledge no such study has been published.

MATERIALS AND METHODS

A total of 440 radiographs of the lateral view of the skull were utilized for this study. The radiographs were identified as those belonging to people of Ijaw ethnic group from the bio-data recorded on X- Ray folders and in the request forms attached. The age and gender were also noted and only those radiographs belonging to adults with ages ranging from 18 to 65 years were selected randomly from the archives of the radiology Departments of the University of Port

Harcourt Teaching Hospital, Port Harcourt, the Braithwaite Memorial Specialist Hospital, Port Harcourt and the Kaliya Specialist Diagnostics, Port Harcourt. All the radiographs were those without any pathological conditions around the sella area as they were reported and confirmed by us as normal skull radiographs.

The materials used for this included an X-ray illuminator, pencil and metric rule. The measurement technique used was CAMP'S method (1924). The length (anteroposterior diameter) was measured in the sagittal plane from the centre most point of the margin of the tuberculum sellae to the anterior margin of the dorsum sellae. In measuring the depth of the sella turcica, a horizontal line is drawn from the posterior clinoid process to the tuberculum sellae. A perpendicular line from the fossa floor is then drawn to bisect this horizontal line and taken as the depth. Error due to parallax was avoided.

Table 1: Showing the range of the length of the Pituitary Fossa with their corresponding frequencies and percentages of occurrence in males and females.

Range	Males		Females	
(mm)	Frequency	%	Frequency	%
7 - 8.5	28	12.7	16	7.3
9 - 10.5	62	28.1	120	54.3
11- 12.5	100	145.5	50	22.8
13 - 14.5	30	13.7	34	15.4
Total	220	100.0	220	100.0

Table 2: Showing the range of the depth of the pituitary fossa with their corresponding frequencies and per centages of occurence in males and females.

Range	Males		Females	
(mm)	Frequency	%	Frequency	%
6 - 7.5	90	41	110	50
8 - 9.5	84	38	76	38.5
10- 11.5	38	17	24	11
12 - 13.5	8	4	10	4.5
Total	220	100.0	220	100.0

RESULTS

The values of the pooled length of the pituitary fossa ranged from 7mm to 14.5mm with a mean of 10.8 $\pm$ 1.7mm while that of the depth was from 6mm to 13.5mm with a mean of 8.2 $\pm$ 1.6mm. From Table 1, the mean values of the length of the pituitary fossa for males and females were 11.0 $\pm$ 1.7mm and 10.7 $\pm$ 1.9mm respectively. This difference was not significant ($P > 0.05$). Most of the subjects (about 75%) had values for the pituitary length within the range of 9mm to 12.5mm from Table 2, the mean depth for males was 8.4 $\pm$ 1.8mm while that of females was 8.5 $\pm$ 1.6mm, this difference was also not significant ($P > 0.05$).

DISCUSSION

The normal dimensions of the pituitary fossa of the adult Ijaws was studied. The mean pooled length was found to be 10.8 $\pm$ 1.7mm and the depth 8.2$\pm$ 1.6mm. The length of the Ijaws was less than that observed for the Yorubas by Akpuaka et al (2006), where the length of the sella for the Yorubas was found to be 11.1mm. This difference was significant ($P < 0.01$). In their study also the Igbos had a pituitary fossa length of 10.92mm, this difference from Ijaw value was however not significant ($P > 0.05$) The depths recorded for both the Yorubas (6.96mm) and the Igbos (5.52mm) were much less and greatly significant ($P < 0.001$) from what was gotten in this study for the Ijaws. The length for the Caucasians (10.5mm) obtained by Camp (1924) and the depth of 8.1mm where less than the Ijaws though not significant ($P > 0.05$).

In conclusion, this study has shown significantly deeper pituitary fossa for the Ijaws when compared to the Yorubas and the Igbos. The Yorubas however, have significantly greater lengths. The differences noted between the Yorubas , the Igbos and our study population which is the Ijaws may be due to diet, socio-cultural and environmental factors, the Ijaws being predominantly riverine dwellers. A larger pituitary fossa size was also observed for the Ijaws compared to the Caucasians, this may well be due to the shape of the skull being smaller in the Caucasians (brachycephalic) than the negroids that have dolicocephalic skull types.

REFERENCES

Acheson RM (1956). Measuring the Pituitary fossa from the Radiographs. B rir J. Radiol, **26** : 76 78.

Akpuaka FC, Anibeze CIP, Eteudo A (2006). Anthropometrical study of the Sella Turcica in a Nigerian Population. J Expt and Clin. Anat **5** (1) : 32 35.

Camp JD (1923). The Normal and Pathologic Anatomy of the Sella Turcica as revealed at Necropsy. Radiology **1** : 65 73.

Camp JD (1924). The Normal and Pathological Anatomy of the Sella Turcica as revealed by Roentgenograms. American Journal of Roentgenology **140** : 797 801.

Chilton LA, Dorst JP, Gran GM (1983). The volume of the Sella Turcica in children New Standards. American Journal of Roentgenology **140** : 797 801.

Davenport CB and Renfoe O (1940). Adolescent Development of the Sella Turcica and the frontal sinus based on consecutive Roentgenograms. American Journal of Roentgenology **44** : 665 679.

Dichiro G, Nelson KB (1962). Volume of the Sella Turcica. American Journal of Roentgenology **87** : 989 1008.

Francis CC (1948). Growth of the Human Pituitary Fossa. Human Biology **200** : 1 -20

Hass LL (1954). The size of the Sella Turcica by Age and Sex. American Journal of Roentgenology **72** : 754 -761.

Moore K (1999). Clinically Oriented Anatomy 4th Ed. Lippincott Williams and Wilkins, 832 -840.

Plant (1978). Anatomic variation of the Sella Turcica. Surg Neurol, **10**: 259 261.

Silverman FN (1957). Roentgen standards for size of the pituitary fossa from infancy through adolescence. American Journal of Roetgenology **78**: 451 -460.

Underwood LE, Radcliffe WB, Guito FC (1976). New standards for the assessment of sella Turcica volume on children, Radiology **119** : 651 -654.