



Original Research Article

A Study on the Association of Oblique Pinna with Asymptomatic Congenital Acyanotic Heart Diseases

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ABSTRACT

Objective: To find out the relation between asymptomatic congenital acyanotic heart disease with oblique pinna.

Methods: This was a prospective study, done over a period of one year from April 2012-March 2013 in the Department of Pediatric Medicine, Medical College Hospital, Kolkata. 100 patients (50 patients with congenital acyanotic heart disease. 50 patients without it) of age group 6 months to 16 years were examined clinically. Echocardiography was done. Angle of ear inclination was measured by photogrammetry.

Results: Among 50 cases, 12(24%) male and 16(32%) female patients had posteriorly rotated pinna. Among 50 controls, 3(6%) male and 8(16%) female patients had posteriorly rotated pinna. In both the group female patients had higher incidence.

Conclusion: We have found out a positive correlation between oblique pinna and asymptomatic congenital acyanotic heart disease. So every child with oblique pinna should undergo careful cardiovascular examination.

Keywords: Pinna, Congenital acyanotic heart disease.

INTRODUCTION

Craniofacial anthropometry has mostly been used as a descriptive tool and has helped clinicians in the description, diagnosis and surgical treatment of abnormal skeletal and facial patterns. It is especially useful in medical genetics because many of the syndromes present at birth-such as Apert, Down, Turner etc.-involve the head region, so it can assist

clinicians to objectively describe what they are seeing".^[1] The diagnosis of many dysmorphic syndromes is based not only on advanced cytogenetic and molecular techniques, but also on recognition of subtle morphological anomalies in craniofacial region. Dysmorphic characters are usually reported by clinicians in descriptive terms such as "wide set eyes", "broad nose", "large mouth" and "posteriorly placed ear".

However, such description is subjective. Measurements taken from a patient can be compared with the values obtained in normal population and deviations from the normative values can be evaluated.^[2] The present study was conducted to acquire knowledge about position of the pinna or angle of ear inclination in cases with congenital acyanotic heart disease and correlate it with the controls. In normal individual the angle of ear inclination is approximately 7-12⁰. Deviation from the normal can be indicative of congenital anomalies.

MATERIALS AND METHODS

The study was conducted on 100 patients of age group 6 months to 16 years attending the outpatient department and or, admitted in the department of Pediatric Medicine, Medical College, Kolkata over a period of 2012-2013. Thorough clinical examination of cardiovascular system by inspection, palpation, percussion and auscultation of was done. Echocardiography was done to confirm the diagnosis. Clinical examinations were done in presence of pediatricians.

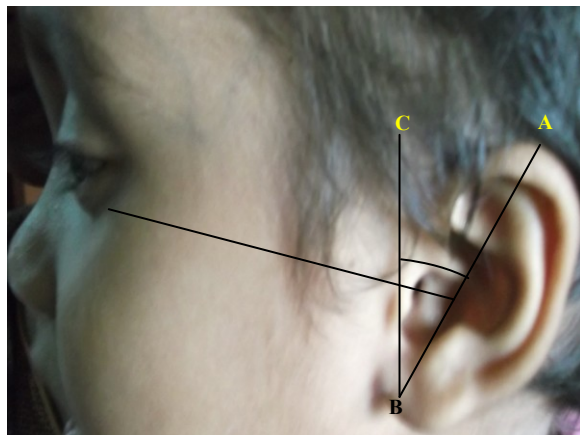


Fig. 1. Showing the measurement of AEI.

Profile photograph of the left side of the face of all children was taken including the entire helical rim of left ear, while keeping the head in the Frankfurt Horizontal (FH) plane. The angle of ear inclination (AEI) was directly measured on the photograph fixed on a large white paper sheet. The angle subtended between longitudinal axis (AB) of ear. It was determine as per technique given by Farkas LG^[3] the line joining highest point on superior aspect of outer rim of helix to the most lowest point on the inferior border of ear lobule and vertical plane(BC) of the head/face represented by a perpendicular drawn on FH plane (FH plane: line extending from the lower border of the left orbit to the upper margin of the external auditory meatus, provided head is held erect and eyes looking straight forward) was considered as angle of ear inclination(AEI) (Fig. 1). The angle was measured with the help of a protractor upto the accuracy of one degree. Every measurement was taken twice by the same examiner and recorded in corresponding form. A third reading was taken if the initial two measurements showed large discrepancy and the two closer readings would then be used.

RESULTS

The study was conducted on 100 patients, 50 cases and 50 controls. Out of those 25 were male and 25 were female in both the group. The age range was 6 months to 16 years. In this study 12(24%) male and 16(32%) female patients had posteriorly rotated pinna among the 50 cases with congenital acyanotic heart disease (Table1). Whereas, 3(6%) male, 8(16%) female patients had posteriorly rotated pinna out of 50 patients without Congenital acyanotic heart disease (Table 2).

Table 1: Children with Congenital Heart Diseases.

Sl No.	Angle (M)	Diagnosis	Sl No.	Angle (F)	Diagnosis
1	5	VSD	1	18	VSD
2	14	VSD	2	11	VSD
3	12	ASD	3	11	VSD
4	14	VSD	4	13	VSD
5	10	VSD	5	3	VSD
6	15	PDA	6	14	ASD
7	27	VSD	7	13	ASD
8	11	VSD	8	10	VSD
9	12	ASD	9	28	VSD
10	12	VSD	10	17	VSD
11	18	VSD	11	12	ASD
12	10	ASD	12	16	VSD
13	19	VSD	13	27	ASD
14	18	ASD	14	12	VSD
15	8	PDA	15	13	VSD
16	19	VSD	16	25	ASD
17	9	VSD	17	15	VSD
18	25	VSD	18	17	VSD
19	20	VSD	19	25	VSD
20	13	ASD	20	12	PDA
21	13	ASD	21	18	ASD
22	11	VSD	22	8	VSD
23	9	VSD	23	19	VSD
24	10	VSD	24	33	VSD
25	10	PDA	25	12	PDA

VSD – Ventricular Septal Defect, ASD – Atrial Septal Defect, PDA- Patent Ductus Arteriosus

Table 2: Children without Heart Disease.

SL NO.	Angle (M)	SL NO.	Angle (F)
1	2 ⁰	1	5 ⁰
2	3 ⁰	2	6 ⁰
3	4 ⁰	3	2 ⁰
4	7 ⁰	4	8 ⁰
5	8 ⁰	5	9 ⁰
6	6 ⁰	6	13 ⁰
7	12 ⁰	7	7 ⁰
8	3 ⁰	8	5 ⁰
9	25 ⁰	9	6 ⁰
10	9 ⁰	10	4 ⁰
11	12 ⁰	11	2 ⁰
12	27 ⁰	12	2 ⁰
13	8 ⁰	13	14 ⁰
14	9 ⁰	14	15 ⁰
15	5 ⁰	15	17 ⁰
16	10 ⁰	16	2 ⁰
17	10 ⁰	17	5 ⁰
18	6 ⁰	18	7 ⁰
19	6 ⁰	19	17 ⁰
20	8 ⁰	20	5 ⁰
21	9 ⁰	21	4 ⁰
22	20 ⁰	22	25 ⁰
23	4 ⁰	23	16 ⁰
24	7 ⁰	24	17 ⁰
25	8 ⁰	25	8 ⁰

DISCUSSION

The values for AEI reported by Farkas LG^[4] ranged between 6.3°-35.6° (mean 20°) in normal girls and 9.3°-31.2° (mean 21°) in boys. However, he had not examined the heart and has therefore, not commented on any co-existing cardiac abnormality.

Walia BNS et al^[5] reported that 18 of the 20 subjects with congenital heart disease having angle of ear inclination more than 12° on photographic measurement, and concluded the mean AEI in heart defects was more than two times as compared to children who had normal ears and normal hearts. In our study 28(56%) of 50 patients with congenital acyanotic heart disease had AEI more than 12°. Of these 28 subjects 12(42.85%) were male, 16 (57.14%) were female.

From the above discussion it can be said that, obliquely placed pinna is associated with congenital acyanotic heart diseases. During embryologic development, external ear appears in- the region around the first pharyngeal groove in the 2nd month and interventricular septum also develops at about the same time. It is possible that the same agent/stimulus acting at this period distorts the development of both the regions simultaneously.^[6]

Neural crest cells are essential for formation of much of the craniofacial region and they also contribute to the conotruncal endocardial cushions, which septate the outflow tract of the heart into pulmonary and aortic channels. So, this might be reason for infants to have cardiac abnormalities with craniofacial defects.^[7]

CONCLUSION

From the above discussion it has been proved that there is certainly a relationship between posteriorly rotated pinna and congenital acyanotic heart disease. Though, of 50 patients without heart disease 3(6%) male, 8(16%) female patients had posteriorly rotated pinna, that is far less common than in subjects with congenital acyanotic heart disease.

Our data suggest that any child whose pinna appears obliquely placed on clinical examination should be carefully

investigated for coexistence of unrecognized congenital cardiac anomalies.

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