The Variations of Auricular Tubercle among Ika People in Delta State, Nigeria

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Abstract

Introduction: Darwinian tubercle is a congenital ear structure which often presents as a thickening in the helix at the junction of the upper and middle third of the outer ear. This cross-sectional study considered the prevalence of auricular tubercle among Ika people in Delta State, Nigeria. **Materials and Methods:** Ethical clearance was gotten from the Ethical Board of Human Anatomy Department, Delta State University, Abraka in Nigeria. The data were sorted by means of the Statistical Package for the Social Sciences (SPSS), version 25.0. This study made use of 388 subjects and informed consent was obtained from the volunteer subjects before commencement of the study. **Results:** The most common auricular tubercle congenital association was accessory tragus, followed by weathering nodules, and congenital absence of the helix. Bilateral asymmetry exists as regards the shape of the ear. Auricle shape varied with the left and right sides as well as sexes. The Darwin tubercle displayed significant gender difference in auricular prevalence ($p<0.05$), and there was no significant age difference in auricular prevalence ($p>0.05$). **Conclusion:** The prevalence of auricular tubercle in this study is forty-nine percent. The most common auricular tubercle congenital association is accessory tragus.

Key words: Tubercle, auricle, Ika, gender, Darwin

Introduction

A very large and prominent part of the head is the ear. An aesthetically fine ear allows one to get a 'natural' look [1]. The ear is an auditory organ involved in preserving the body's balance. It consists of three parts: the middle ear, the outer ear, and the inner ear. The outer ear is formed by the pinna or auricle and external auditory meatus [2].

The curved rim of the auricle is known as the helix [3]. At the posterosuperior part of the helix is a small tubercle known as the auricular tubercle (Darwin's tubercle). A congenital ear structure called Darwinian tubercle frequently manifests as a thickening of the helix at the intersection of the upper and middle thirds [3]. Around the sixth month of fetal development, when the entire auricle closely resembles that of adult monkeys, Darwinian tubercle becomes highly noticeable [4]. Charles Darwin initially identified the Darwinian tubercle as a vestige trait that suggests shared ancestry among monkeys. However, Darwin himself gave it the term "woolnerian tip" in honor of Thomas Woolner, who initially termed it a primeval trait by depicting it in one statue [5].

The aim of this research considered the prevalence of auricular tubercle among Ika people in Delta State, Nigeria.

Materials and Methods

A cross-sectional study design was employed. Exactly 388 Ika subjects in Delta State were used for this study. The duration of this study was three months (January to March, 2022). Data on the auricular tubercle was collected using a data collection sheet.

Subtypes of Darwin's tubercle were noted thus:

1 = Undeveloped Darwin's Tubercle: In this type no Darwin's tubercle was seen on the helix

2 = Semi-developed Darwin's tubercle: There is a semi-developed small sized Darwin's tubercle in this subtype but still it was not easily seen.

3.= Fully-developed Darwin's tubercle: In this subtype Darwin's tubercle is easily found on helix but was not so clear as to be seen from half a meter away.

4 = Very significant Darwin's tubercle: Darwin's tubercle is very significant and even from a meter away it could easily be seen.

5 = Multiple Darwin's tubercle: In this subtype more than one Darwin's tubercles are seen.

Approval for this enquiry was gotten from the Research and Ethics Committee of Anatomy Department, Faculty of Basic Medical Sciences, Delta State University, Abraka. The

data obtained was analyzed using Statistical Package for the Social Sciences (SPSS), version 25.0. Chi-square test at the 95% confidence interval was also used to evaluate gender and age differences in the Darwin's tubercle. P value lesser than 0.05 was considered to be statistically significant.

Results

Table 1 depict that the common auricular subtypes in descending order are: projection, nodosity, enlargement and tubercle (29%, 27%, 25.4%, and 18% respectively). From Table 2, the right ear had the highest prevalence of auricular tubercle (39.7%), followed by the left ear (35.4%), and both ears (24.9%).

From table 3, the most common auricular tubercle congenital association is accessory tragus (47.9%), followed by weathering nodules (28.8%), and congenital absence of the helix (23.3%). Table 4 divulged that the enlarged auricular shape and nodosity were common in both ears, the projection was predominant on the right ear and tubercle was least prevalent in the right ear.

The prevalence of auricule was more among male subjects when compared to females, as seen in Table 5. In descending order it was more prevalent among subjects aged 20-24 years (18.8%), 25-29 years (13.1%), 35-39 years (6.7%), 15-19 years (5.2%), and 30-34 years (4.9%), as seen in Table 6. Table 7 divulged a significant gender difference in auricular prevalence ($p<0.05$). There was however no significant age difference in auricular prevalence ($p>0.05$) as seen in Table 8.

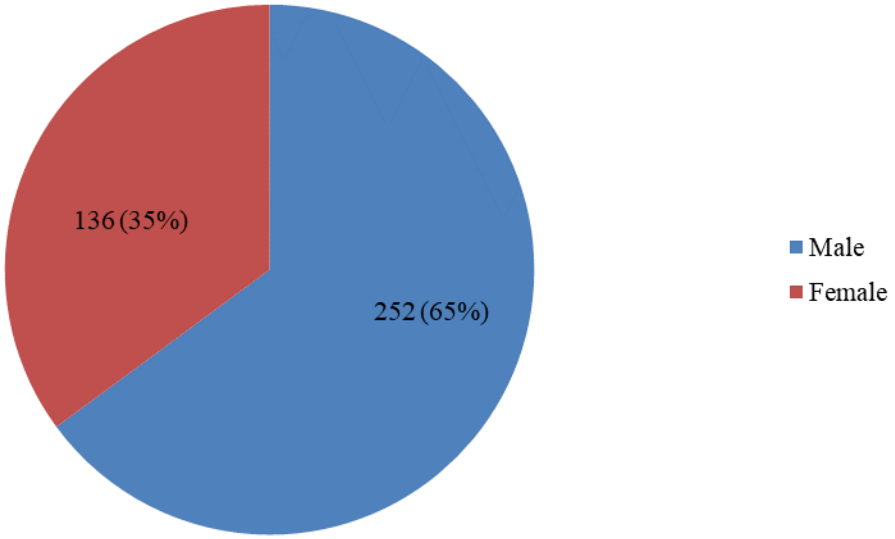

Figure 1: Distribution of Gender in the studied populace.

Table 1: Distribution of auricular tubercle subtypes

Auricular Subtypes	Frequency (%)
Enlargement	48 (25.4)
Nodosity	51 (27.0)
Projection	56 (29.6)
Tubercle	34 (18.0)
Total	**189 (100.0)**

Table 2: Distribution of ear side with auricular tubercle.

Ear side with Auricular tubercle	Frequency (%)
Both	47 (24.9)
Left	67 (35.4)
Right	75 (39.7)
Total	**189 (100.0)**

Table 3: Distribution of auricular tubercle congenital association.

Auricular tubercle Congenital Association	Frequency (%)
Accessory Tragus	35 (47.9)
Congenital absence of the Helix	17 (23.3)
Weathering nodules	21 (28.8)
Total	**73 (100.0)**

Table 4: Distribution of auricular tubercle shapes based on sides of ear

Auricular prevalence shapes	Frequency (%)		
	Left	**Right**	**Both**
Enlargement	14 (7.4)	15 (7.9)	19 (10.1)
Nodosity	9 (4.8)	18 (9.5)	24 (12.7)
Projection	12 (6.3)	24 (12.7)	20 (10.6)
Tubercle	12 (6.3)	10 (5.3)	12 (6.3)
Total	**47 (24.9)**	**67 (35.4)**	**75 (39.7)**

Table 5: Distribution of auricular prevalence based on gender

Auricular prevalence	Frequency (%)	
	Male	**Female**
Absent	119 (30.7)	80 (20.6)
Present	133 (34.3)	56 (14.4)
Total	**252 (64.9)**	**136 (35.1)**

Table 6: Distribution of auricular prevalence based on age

Age group (years)	Frequency (%)	
	Absent	**Present**
15-19	17 (4.4)	20 (5.2)
20-24	85 (21.9)	73 (18.8)
25-29	49 (12.6)	51 (13.1)
30-34	29 (7.5)	19 (4.9)
35-39	19 (4.9)	26 (6.7)
Total	**199 (51.3)**	**189 (48.7)**

Table 7: Chi-square test of association of auricular prevalence based on gender

Auricular prevalence	Frequency (%)		Chi-square	Df	P-value
	Male	**Female**			
Absent	119 (30.7)	80 (20.6)			
Present	133 (34.3)	56 (14.4)	4.759	1	**0.029**
Total	**252 (64.9)**	**136 (35.1)**			

Table 8: Chi-square test of association of auricular prevalence based on age

Age group (years)	Frequency (%)		Chi-square	Df	P-value
	Absent	**Present**			
15-19	17 (4.4)	20 (5.2)			
20-24	85 (21.9)	73 (18.8)			
25-29	49 (12.6)	51 (13.1)	4.112	4	0.391
30-34	29 (7.5)	19 (4.9)			
35-39	19 (4.9)	26 (6.7)			
Total	**199 (51.3)**	**189 (48.7)**			

Discussion

This study utilized 388 subjects (n = 252, 65% males and n = 136, 35% females). The age of the subjects ranged from 20-24 years, followed by 25-29years, 30-34years, 35-39ears and 15-

19years. This study finding was not in line with that of Krishan *et al.* [6] who reported that their study comprised of 90 males and 87 females; Rubio *et al*. [7] who utilized 303 individuals between 18 and 72 years old; Purkait and Singh [5] who utilized 700 male and female participants.

The prevalence of auricular tubercle in this study was forty-nine percent (49%). This prevalence was higher than the 40% recorded by Loh and Cohen [8]. However, it was lower than the 98.9% recorded by Shihab and Shakir [9].

In this study, the common auricular subtypes in descending order are: projection, nodosity, enlargement and tubercle. The most common auricular tubercle congenital association was accessory tragus, followed by weathering nodules, and congenital absence of the helix. This study finding was not in line with that of Krishan *et al.* [6] who found that the nodosity type Darwin's tubercle was the most prevalent followed by enlargement and projection.

Bilateral asymmetry occurred concerning the shape of the ear. The shape of the auricle also varied with regard to the right and left sides as well as gender. The right ear had the highest prevalence of auricular tubercle, followed by the left ear, and both ears. The wide variability of the ear could be credited to the distinctive structure and features of the ear.

The enlarged auricular shape and nodosity were dominant in both ears, the projection was rampant in the right ear and tubercle was least prevalent in the right ear. Loh and Cohen [8] who found that the Darwin's tubercle was common bilaterally supported this study's finding.

In this study, the gender prevalence of auricular prevalence was such that it was more prevalent among male subjects when compared to females and this variation was significant ($p<0.05$). The finding of Verma *et al*. [10] who reported no significant gender difference in auricular prevalence disagreed with this study finding. This disparity could be accredited to differences in the study population and area. However, Shihab and Shakir [9] who found that it was more prevalent among male subjects when compared to females supported this study finding.

This study noted that in descending order, Darwin tubercle was more prevalent among subjects aged 20-24 years, 25-29 years, 35-39 years, 15-19 years, and 30-34 years and that there was no significant age difference in auricular prevalence ($p>0.05$). This finding was supported by that of Rubio *et al*. [7] who recorded that there was no significant age difference in tubercle prevalence ($p>0.05$).

Conclusion

The prevalence of auricular tubercle in this study was forty-nine percent (49%). The most common auricular tubercle congenital association was accessory tragus. The shape of the auricle varied with the left and right sides as well as gender.

References

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