Preauricular Sinus: Presentation, Laterality pattern, Ethnic and Gender differences among Nigerians.

ABSTRACT

Background: Preauricular sinus (PAS) is a benign congenital malformation evident as a dell, sinus, or fissure usually located at or near the root of the anterior horn of the helix. This study aims to determine the incidence, laterality pattern with ethnic and gender differences among Nigerians.

Method: The study was a cross sectional descriptive survey conducted in March 2015 using structured questionnaire.

Results: There were total of 374 participants with their ages ranged from (3 to 80) years. Majority were Yoruba 298(79.5%) followed by Igbo 40(10.7%). Fifty respondents have preauricular sinus giving a prevalence of 13.3% and majority of the affected 32(64%) were females. Thirty four (68%) of the affected were Yoruba followed by Hausa 9 (18%). Right side was mostly affected in 25(50%) and the right dominant was seen mostly among Yoruba and Igbo while left dominant was seen among Hausa. One person had repeated surgical excision due to recurrent infections and sinus discharge while 98.0% were asymptomatic. None of the subjects with PAS was found to have dysmorphic facial features, neither auricular defects nor renal and hearing affectation.

Conclusion Preauricular sinus has a relatively high prevalence with rare association with other congenital craniofacial or renal anomalies in our environment. There is a need for

public enlightenment and more screening programmes of the disorder as well as a need for further studies to unravel the reason behind absence of associated other congenital anomalies with preauricular sinus in our environment.

Key Words: Preauricular sinus, laterality, ethnicity, culture, congenital anomaly.

INTRODUCTION

Preauricular sinus (PAS) is a benign congenital malformation evident as a dell, sinus, or fissure usually located at or near the root of the anterior horn of the helix[1]. It may become infected and symptomatic, when it would require total excision to prevent its recurrence[2-4]. Africans are quoted as having the highest incidence, between 4- 10%: from various studies on patients [4, 5]. The reported incidence is between 0.1% and 0.9% in Europe and the united states, 1.6% - 2.5% in Taiwan [2, 3]. Pre-auricular sinus is usually asymptomatic and only one-third of persons are aware of their malformations [6]. A researcher had reported that it takes an average of about 9 years before patients with pre-auricular sinuses will seek a medical care usually following symptoms[6].

Various studies have determined a right-sided or left-sidedness (lateralism) of PAS [7, 8]. Jimoh et al[4] in Ilorin, Nigeria reported left predominance of PAS while Tobih et al[5] in Osogbo reported right predominance. Report on gender predisposition had been inconsistent[5]. While some researchers had reported equal gender predisposition of PAS[9], Most studies from Nigeria reported male predominance of PAS. Other researchers however reported more prevalence of the disease in females [5, 9 - 11]. Studies from Nigeria and Kenya have proposed socio-cultural belief of the association of PAS with acquisition of wealth [9 - 11]. The purpose of this study is to determine the incidence, laterality pattern with ethnic and gender differences among Nigerians. The study also aims to determine influence of socio-cultural belief on the

presentation / management of preauricular sinus within a Central Business District of Ile Ife, Nigeria

MATERIALS AND METHODS

The study was a cross sectional descriptive survey conducted in March 2015. Respondents were drawn from shop workers on either side of the main street of the central business district of Ile-Ife from one major intersection (Campus Road 7) to the other (Iremo Street). Informed consent was obtained from all eligible participants following which structured questionnaire was administered for patients' demographic and clinical information. Permission was also obtained from both Yoruba and non-Yoruba ("Ezendigbo" and "Seriki") community leaders before the survey. Participants that gave informed consent from a total population of that district of town were recruited into the study. The information sought for included age, sex, cultural beliefs and ethnic group. Also information included were symptoms, such as presence of pain, swelling, discharge, recurrence of symptoms, and various management modality affected participants have received. Patients that did not give informed consent were not included in the study.

Minimum Sample size was calculated using the Fisher formula, where N=Minimum Sample Size, P= Prevalence from a previous study (of Africans = 10%), Z = standard normal deviation. (which is 1.96), Se= Standard Error (which= 5% for precision of 10% at a Confidence Interval of 95%) i.e. 0.05. Thus, $n = Z^2 P (1-P)/Se^2 = 2^2 \times 0.1 \times 0.9/0.05 \times 0.05 =$ 138 subjects. Other quantitative variables were derived as the mean with a 95% confidence interval (CI).

Data obtained were entered into a spread sheet and analysis was done using statistical package for social sciences (SPSS version 21.0). Data were presented in a descriptive form in

tabular and graphic forms. Chi-square was used to determine the differences between laterality and ethnicity and gender and the level of significant was set at 0.05

RESULTS

There was total of 374 respondents with the median age of 30 years. The ages of the respondents range from 3years to 80 years. Distribution by various ethnic groups shows that majority of the respondents were Yoruba consisting of 298(79.5%) while the least was Tappa 1 (0.26%) figure 1 shows the distribution of the respondents by ethnic groups. Fifty respondents were found to have preauricular sinus (PAS) which gives a prevalence of 13.3%. Out of 50 respondents with PAS, majority 32(64%) were female (X2 = 0.149, p = 0.928). Table 1 shows the laterality, ethnic and gender distribution of PAS among the respondents. The disorder was found to be more prevalent among the Yoruba's 34 out of 50 (68%) followed by the Hausa 18%, Igbo 12% and the least was among Tappa 2% although this happened to be the only Tappa present in the study population. In ascertaining level of association between ethnic group and gender with laterality of PAS, the chi square test showed that there is no statistical significant differences in distribution of PAS by ethnic group and gender ($X^2 = 7.425$, p = 0.283 and $X^2 = 0.149$, p = 0.928) respectively (Tables 1).

Of the 50 respondents with preauricular sinus, majority 25(50%) had it on the right side, figure 2 shows the laterality by distribution of preauricular sinus among the respondents. PAS on the right was predominant in Yoruba and Igbo ethnic groups but predominant on the left among Hausa ethnic group. The only Tappa ethnic tribe with prearicular sinus was bilateral (table 1). Surgical history of repeated incisions following recurrent infections (with symptoms of pain and sinus discharge) occurred only in the case from Tappa. The remaining 98.0% had always been asymptomatic. None of the subjects with PAS was found to have

dysmorphic facial features, auricular defects, nor other sinuses or fistulas in the head and neck region.

DISCUSSION

Preauricular sinus is a benign congenital malformation most of which are incidentally discovered during routine clinical examination[4]. The high prevalence of PAS in the present study is in consonant with the findings of other authors in Nigeria and West African sub-region. Our finding was similar to those of Tobih et al [5] in Osogbo south western Nigeria and Jimoh et al [4] in Ilorin North central Nigeria. It was initially postulated that hospital based study may be responsible for the higher prevalence of PAS in most African settings, but ours is a community based study like most studies in the western countries. This implies that differences in the prevalence between African setting and studies in Europe and American countries are more of racial predisposition. Another factor for differences in prevalence may be related to the sample size. For instance, Adegbiji et al[1] in Ado Ekiti, Nigeria reported a lower prevalence of 4.4% which may be due to higher number of sample size in their study.

Another finding from our study is the ethnic differences in the prevalence of PAS. For instance, 34/298 among the Yoruba (11.4%), 6/40 among the Igbo (15%) and 9/35 among the Hausa (25.7%) shows some differences in the prevalence among various ethnic groups. Although, this has to be interpreted with caution, for instance the only Tapa ethnic group in our study has PAS which cannot be extrapolated to mean 100% prevalence among such ethnic group.

In our study 82% of cases were found to be unilateral with 50% predominance of PAS on the right. This was similar to the findings of Tobih et al [5] who reported 75% laterality with 49% right dominance. A study by Paulozzi et al[7] also reported a right sided dominance in incidence of preauricular sinus. Jimoh et al [4] reported 93% laterality but with left dominance

while Adeyemo et al [9] also discovered 87.5% unilateralism but without lateralised dominance. Some studies [7, 8], however, reported only 50% unilateralism. Several studies were equivocal as to the actual dominant side with the preauricular sinus: for instance there was equal right and left affectation in one cited Nigerian study[9]. Although, the general finding in our study is right dominance, however PAS is mainly left-sided in the Hausa tribe. Geographical, ethnicity and racial differences had been deduced to be contributed to the laterality of PAS [4]. It might also be a chance occurrence.

With 62% of those affected being female we thus deduced a female: male ratio of 1.66: 1.This is similar to the study at Ibadan [9] with a F: M ratio of 1.6:1. Adobamen et al[6] also reported a female preponderance with M:F ratio 1: 3.3. Our finding was however in contrast to the finding in a study in Ilorin who reported a male predominance with a male: female ratio of 1.3: 1[4]. Report from a study in Osogbo, Nigeria also showed male predominance. Findings from an American study [10] also concluded that male infants are at a greater risk of having birth defects than female infants. These findings show inconsistencies in the gender distributions or predisposition to preauricular sinus [10 - 12].

Leung et al[13] in their published study reported associated renal anomalies- especially Branchio-otorenal syndrome with PAS and that some minor anomalies of the head and neck region may aid presumptive diagnosis during initial examination . The present study however did not find any other associated congenital anomalies with preauricular sinus. Similar to our finding was that reported by other authors most especially in Nigeria about non association of PAS with other anomalies or syndromes unlike what were reported in developed countries [4, 5, 9, 14]. There may be a need for further studies like genetic study, auditory testing and renal ultrasound should be considered or need to deliberately search for any of these association or factors responsible for absence of those reported associated anomalies in our environment [3, 14].

Although, the general notion is that preauricular sinus is rarely infected, symptomatic PAS of 17 – 47 % was reported in most published studies. Findings from our study are however much more less than the reports from most published studies [4, 6, 9, 11]. Since our study is a community based one and there is a strong cultural belief and attachment to PAS. Many people may not readily come out to report associated symptoms. For instance, in Yoruba land, there is a strong belief that the presence of PAS in an individual will give such an individual supernatural abilities to be wealthy [9]. This might actually be the factor while only one person operated upon in the present study is not actually among the Yoruba tribe with largest number of people with PAS. Similar study in south western Nigeria where Yoruba tribe were domicile had shown that even those individuals with symptomatic preauricular sinus had declined surgical intervention or opted for another alternatives in order to avoid excision of pre-auricular sinus[5].

Surgery is the usual course of action to relieve and prevent recurrence [15 - 17]. However, the most economical surgery and most opted for by the patient because of the relatively lower cost is sinectomy which usually results in incomplete extirpation. The identified case from Tappa had repeated excisions for recurrence within three years. Various pre-surgery protocols are in agreement that surgery is usually indicated following at least two subsequent infections [15]. Frequency of recurrence has been stated to be 19- 40% [16]. To prevent recurrence, it has been suggested that a preauricular elliptic incision which is continued upwards around the ear [17.] Total extirpation is still difficult in the presence of infection so excision of uninfected preauricular sinus has been advocated[18]. Considering the usually poor socioeconomic background of most people in our environment, patients may result to self medication rather than attend hospital for a more effective lasting treatment of symptomatic preauricular sinus [19].

Conclusion:

Preauricular sinus; though it was said to be a rare and benign lesion, it has a relatively high prevalence with rare association with other congenital craniofacial or renal anomalies in our environment. The effective management of the condition is influenced by cultural believe and poverty, there is therefore a need for public enlightenment and screening programmes of the various communities for the incidence and morbidity profile of preauricular sinus and hence its socioeconomic impact. A need for further studies to unravel the reason behind absence of associated other congenital anomalies with preauricular sinus in our environment is therefore advocated.

Ethical approval: NA

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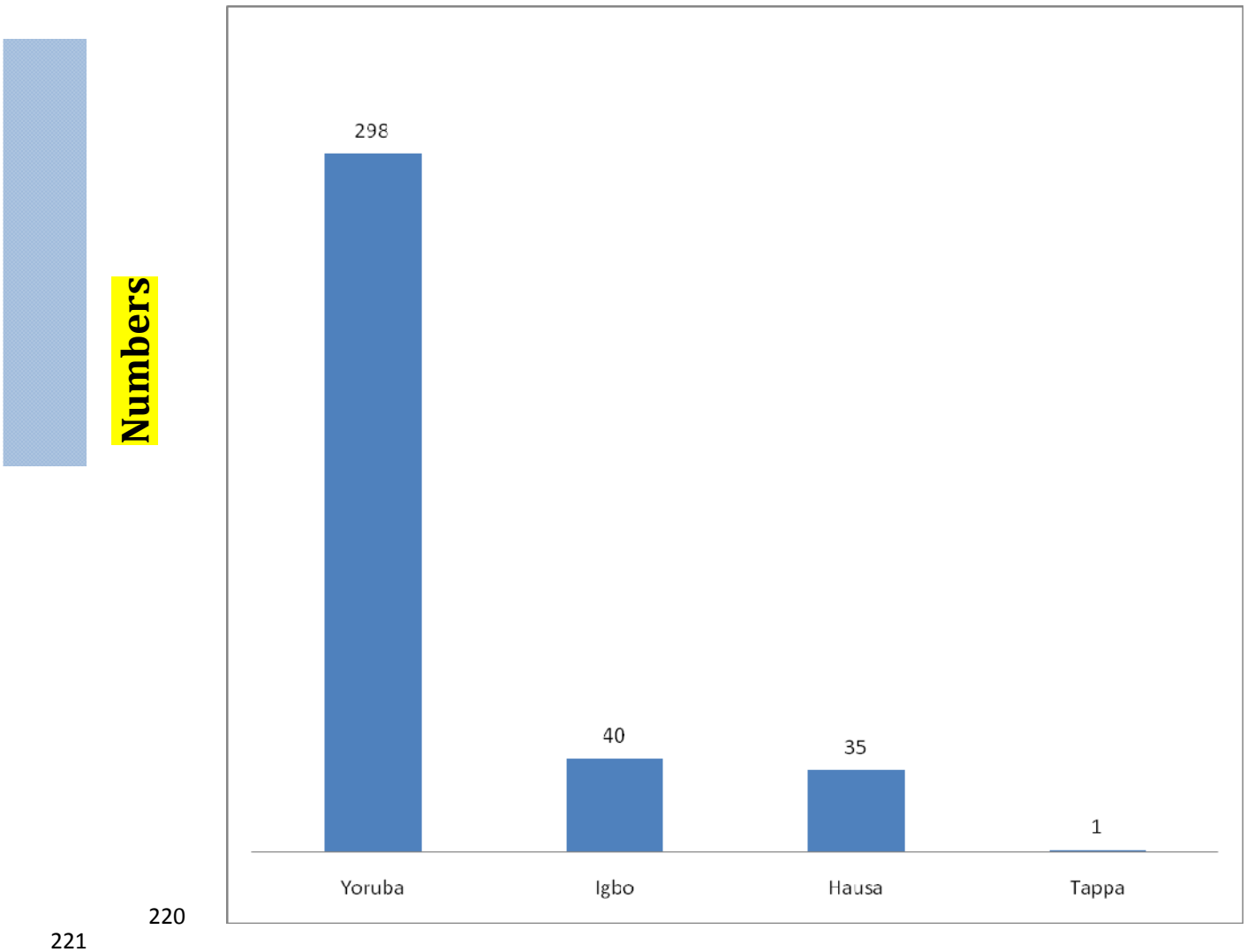

Figure 1. Distribution of the respondents numbers by ethnic groups

223 Table 1: Laterality of pre-auricular sinus in the study population

Variables	**Laterality**			**Total (%)**
Ethnicity	Bilateral (%)	Right (%)	Left (%)	
Yoruba	6 (26.5)	19 (55.9)	9 (26.5)	34 (100)
Hausa	1 (11.1)	3 (33.3)	5 (55.6)	9 (100)
Igbo	1 (16.7)	3 (50)	2 (33.3)	6 (100)
Tappa	1 (100)	0	0	1 (100)
Total (X^2 = 7.425, p = 0.283)	9 (18)	25 (50)	16 (32)	50 (100)
Gender				
Male	3 (16.7)	9 (50)	6 (33.3)	18 (100)
Female	6 (18.8)	16 (50)	10 (31.3)	32 (100)
Total (X^2 = 0.149, p = 0.928)	9 (18)	25 (50)	16 (32)	50 (100)

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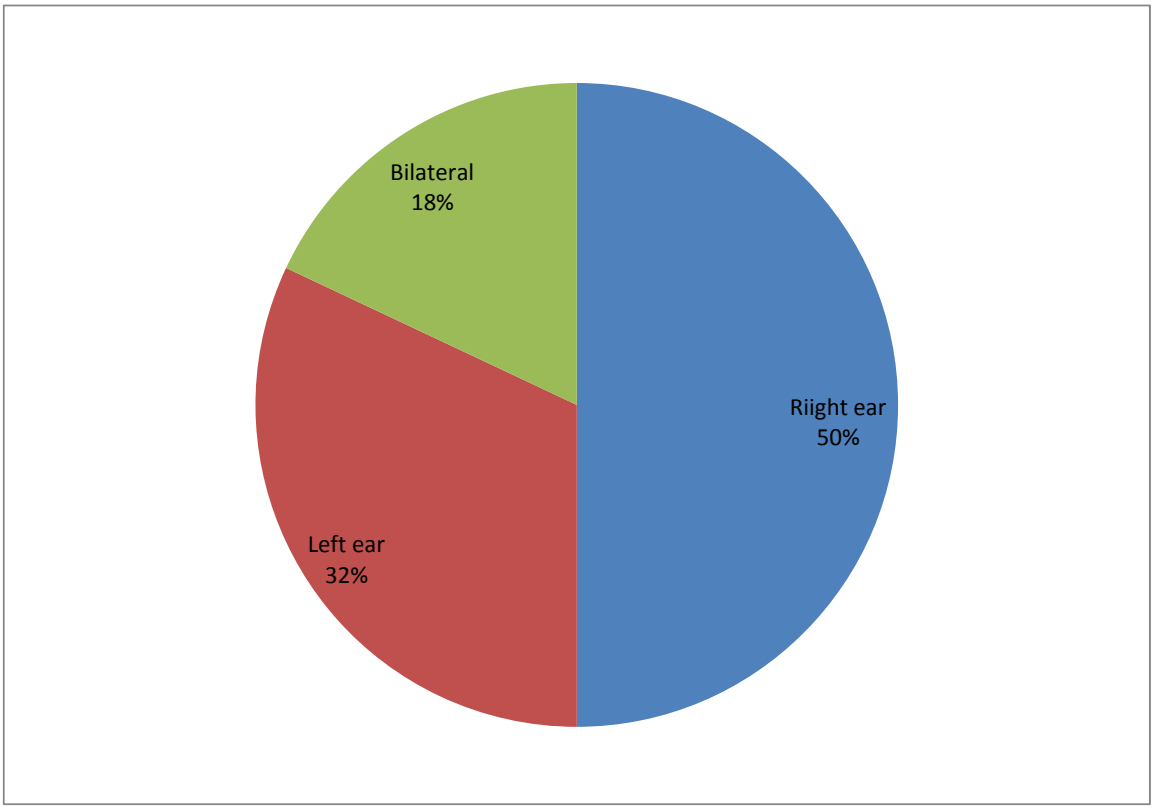

Fig-2: laterality by distribution of preauricular sinus among the respondents