ORIGINAL ARTICLE

Pattern of Childhood Deafness In An Audiologic Centre In Port Harcourt, Nigeria

* E. A. D. Alikor MSc, FWACP, * * A.O. Otana PhD

Departments of * Paediatrics and ** Otorhinolarynology, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.

ABSTRACT

Background: *This study was conducted to determine the incidence of hearing impairment in children visiting a private audiology clinic on Port Harcourt, Nigeria, the type and degree of hearing impairment in these children, and to determine if there is any case for a community-based study on childhood hearing-impairment in the region.*

Methods: *This is a retrospective study of all persons up to the age of 15 years seen in an audiologic centre in Port Harcourt Nigeria over a 42 month period from January 2000 to June 2003. Demographic data were extracted from the medical records of each subject. Audiological evaluation was performed using standard Pure Tone Audiometry for subjects above 3 years and free-field audiometric techniques for those below 3 years.*

Results: *Sixty-two (48.9%) of the 127 persons 15 years and below who were examined showed evidence of hearing impairment. There were 29 males and 33 females (male:female ratio = 1:1.14). Age range was 2 to 15 years, mean = 8.3 ± 4.6 years. Out of the 124 ears examined, 121 showed evidence of hearing impairment whilst 3 were normal. Bilateral hearing impairment was found in 59 (95.2%) of the subjects with hearing loss. Profound, severe, moderate and mild bilateral hearing loss were found in 42 (72%), 7 (11.9%), 6 (10.2%) and 4 (6.8%) subjects respectively. Ninety-seven (83.2%) of the 118 ears in subjects with bilateral hearing loss have, at least, severe hearing impairment. About 90% of the subjects with bilateral hearing loss had sensironeural hearing defect in at least one ear.*

Conclusion: *Most of the cases of hearing impairment in our study were of profound/severe severity. Majority were of sensorineural type. There is the need for a community-based study to estimate the prevalence of hearing impairment in the study area.*

KEYWORDS: *Hearing impairment; Prevalence; Childhood.*

Paper accepted for publication 28th April 2005.

INTRODUCTION

Hearing impairment is described as an abnormal function of the auditory system, e.g. decreased auditory sensitivity, binaural integration, ability to resolve different sound frequencies with respect to population norms. It is estimated that there are almost 5.1 million children with hearing impairment in Africa[1]. In a community-based study of childhood disability involving over 30000 children in Enugu, Izuora found hearing impairment to constitute 13.52% of all disability in children in the metropolis[2]. Deaf-mutism constituted 73% of the handicaps in children in specialised institutions in two large cities in Oyo State, South-West Nigerian[3]. A recent survey of school children in Lagos metropolis showed a prevalence of hearing impairment of 13.9%[4]. Lower prevalence figure of 2.1% has been obtained in Finnish school children[5].

Hearing loss in the first 5 years of life can have a profound effect on the child if it is not detected and diagnosed early, with prompt and appropriate management provided. Even mild hearing impairment can cause a reduction in rate of development of speech and language, leading to decreased intellectual and social development and poor school performance. These effects, in many cases, do not stop at childhood but may remain with the individual for the rest of his or her life. However, many problems caused by hearing impairments can be overcome by using appropriate aids and equipment, acquiring new skills through education, training, and support from family and community.

Chronic otitis media has been found to be the commonest cause of hearing impairment in developing countries[1,4]. Other common causes include impaction of cerumen, trauma, ototoxic drugs and hereditary[1,6,7]. In a study of 298 Nigerian children with profound deafness, Ijaduola found congenital/perinatal causes, unknown factors, measles and meningitis to be the common causes of deafness in 33%, 26%, 13% and 11% of patients[8]. In those whose deafness were of congenital/perinatal origin, the study found that 40% and 17% were familial and by bilirubin encephalopathy respectively. In Enugu, congenital (unknown causes) accounted for 33.3% of all cases of hearing impairment, whilst otitis media, bilirubin encephalopathy and meningitis were responsible for 20%, 20% and 13.3% of the cases respectively[2].

The aetiological pattern of hearing impairment in African children shows that sensorineural hearing

Correspondence to: Dr. E. A. D. Alikor

impairment is the commonest type seen in this area. However, delay in seeking medical attention has resulted in many cases being so complicated that an initial case of otitis media, for instance, may present with mixed type of hearing impairment.

In the Niger Delta Region of the country, there is a dearth of published scientific information on childhood hearing impairment. This state of limited data on hearing impairment in general and childhood hearing impairment in particular could be as a result of grossly inadequate, and in many cases non-existent, trained personnel, lack of facilities, negative attitude and poor motivation both of the medical profession and the general public.

A Community-based Hearing Health Care Centre (CHHCC) with an Audiology Clinic has recently been established in Port Harcourt metropolis. Also, an audiology unit is being set up in the University of Port Harcourt Teaching Hospital. These mark the beginning of an attempt at systematic study of childhood hearing impairment in the region. This study was thus conducted to determine the prevalence of hearing impairment in children visiting the clinic during the study period; the type and degree of hearing impairment, and to determine if there is any case for a community-based study on childhood hearing-impairment in the region.

METHODS

This is a retrospective study done at a private Audiology Centre situated in the metropolis of Port Harcourt in the Niger Delta region of Nigeria. The patients were all persons up to the age of 15 years who were seen in the centre for audiologic evaluation during the period from January 2000 to June 2003. The subjects were referred by paediatricians, oto-rhino-laryngologists and general practitioners practising in Port Harcourt and adjoining towns for confirmation or classification of suspected hearing impairment.

Demographic data were extracted from the medical records of each subject. These include age sex and family history of deafness.

Audiological evaluation was performed using the British Society of Audiology recommended procedures for pure tone audiometry using manually operated instrument[9]. However, for patients less than 3 years; free-field audiometric techniques were employed including adapted Visual Reinforcement Audiometry (VRA) where necessary. The method of free-field audiometric technique used was as described for paediatric audiology by McCormick[10]. Conversion factors from free-field measurements made in dBA and dBSPL to dBHL were derived using established clinical data[11]. The model of audiometer used was amplaid 171s. The degree of hearing impairment was classified based on the recommendations of the British Society of Audiology[12]. Hearing at 20-40dBHl was classified as mild HI, 41-70dBHl moderate, 71-95dBHl severe and more than 95dBHl as profound. All Audiological investigations were carried out by three audiology assistants under the supervision of a professional audiologist.

Data analysis was performed using the Epi-Info software version 6.04d.

RESULTS

A total of 1,527 persons were seen in the study centre for audiologic ealuation during the period under review, out of which 127 (8.3%) were persons 15 years and below. Of this later group, 62 (48.9%) showed evidence of hearing impairment, and formed the study group.

There were 29 males and 33 females (male:female ratio = 1:1.14). They a mean age of 8.3 ± 4.6 years (range 2 to 15 years). Table I shows the age and sex distribution of the study group. Thirty four subjects (54.8%) presented for first audiological evaluation at age = 8 years.

Out of the 124 ears examined, 121 showed evidence of hearing impairment (HI) whilst 3 were normal. Unilateral hearing loss was found in 3 subjects, with 59 subjects having bilateral hearing loss. Of the 3 with unilateral loss of hearing, one was a 12 year old male with right sided sensorineural hearing impairment and a positive family history of hearing impairment; the second was a 15 year old male with left sided profound HI and no family history of hearing impairment whilst the third was a male, 12 year old with severe left sided loss of hearing. Table II shows the distribution of the degree of HI in the 59 subjects with bilateral loss of hearing. Ninety seven (83.2%) of the 118 ears in subjects with bilateral hearing loss have, at least, severe hearing impairment.

Table III shows the degree of HI in the subjects with bilateral hearing loss when, for each subject, both ears are considered. Forty two (71.2%) and 50 (84.8%) of these group of subjects have profound and severe hearing loss respectively in at least one ear. About 90% of the subjects with bilateral hearing loss had sensorineural hearing defect in at least one ear (Table IV).

Table I. Age And Sex Distribution Of Study Group

		Age Group in Years				
		<3	4-7	8-11	12-15	Total
	Male	9	9	4	7	29
Sex	Female	6	4	10	13	33
	Total	15	13	14	20	62

Table II. Distribution of degree of Hearing Impairment (HI) in the study Group with Bilateral HI

Degree	Right (%)	Left (%)	Total
Mild	2 (3.4)	4 (6.8)	6 (5.1)
Moderate	9 (15.3)	6 (10.2)	15 (12.7)
Severe	8 (13.6)	7 (11.9)	15 (12.7)
Profoun	40 (67.8)	42 (71.2)	82 (69.5)
Total	59	59	118 (100)

Table III. Degree of Hearing Impairment (HI) (considering both ears) in the study Group with Bilateral HI

Degree of HI	Number (%)	Cummulative
Both Ears Profound	40 (67.8%)	67.8%
One Ear Profound	2 (3.4%)	71.2%
Both Ears Severe	7 (11.9%)	83.1%
One Ear Severe	1 (1.7%)	84.8%
Both Ears Moderate	5 (8.5%)	93.3%
One Ear Moderate	3 (5.1%)	98.3%
Both Ears Mild	1 (1.7%)	100.0%
Total	59 (100%)	

Table IV. Type of Hearing Impairment (HI) in the study Group

HI Type	Right (%)	Left (%)	Total
Sensorineural	53 (89.8)	54 (91.5)	107
Conductive	5 (8.5)	2 (3.4)	7
Mixed	1 (1.7)	3 (5.1)	4
Total	59	59	118

DISCUSSION

The finding in this study that 84.8% and 71% of the children presenting for audiologic evaluation had profound or severe hearing impairment respectively in at least one ear reflects the late presentation of cases of hearing impairment in children in the study population. This is further emphasised by the observation in this study that more than 54% of the study group presented for audiological assessment for the first time at the age of ≥ 8years. In a study of patients with hearing impairment in Jos, 24% presented in the hospital after 5 years of onset of symptoms while about 50% presented after at least 1 year of noticing difficulty in hearing[12]. With late presentation, intervention becomes less successful especially in congenital or pre-lingual cases. Late presentation to health institution is known to be common in developing countries. Non-availability of and difficult access to medical facility, poor awareness and perception of the nature and degree of disability, cost and the lack of faith by the people in orthodox medicine are some of the factors considered as responsible for lateness in reporting for medical attention.. In the case of hearing impairment, the onset may be insidious and the disorder remains unrecognised until it gets to severe or profound stage. Even when parents or caregivers note the disorder, there is the tendency to hide this information to avoid stigmatisation in the community.

The high hospital prevalence of hearing impairment of 48% found in this study is not surprising considering that these were mostly selected cases that were referred to the centre at the suspicion of hearing impairment.

The high prevalence of sensorineural hearing impairment in the study group may reflect the possible aetiology of the hearing disorder.

The result of this study of a high incidence of profound/severe hearing impairment of 82% is similar to the finding in Ibadan where profound/severe hearing loss to constitute 86% of childhood hearing impairment[13]. This creates the suspicion that a large group of children exist in the community with hearing impairment.

There is therefore the need to conduct a community-based study to be able to estimate the burden of impairment in children in the Port Harcourt metropolis and Niger Delta area in general.

In conclusion, most of the cases of hearing impairment in children presenting for audiologic assessment in our study centre are of profound/severe severity. Majority of the cases were of sensorineural type. There is the need for a

community-based study to estimate the prevalence of hearing impairment in the study area.

ACKNOWLEDGEMENTS

The authors are indebted to the Management, Otana Hearing & Edu-Health Services, Port Harcourt for permission for the data used in this study.

REFERENCES

1. Smith A, Hatcher J Preventing deafness in Africa's children. Afr Health 1992;15:33-5.
2. Izuora GI. A pilot study of disability in Children around Enugu. West Afr J Med 1988; 7: 117-123.
3. Erinoso AO. Epidemiological survey of the handicapped in two large cities in Oyo State of Nigeria. West Afr J Med 1988; 7: 2000-204.
4. Olusanya BO, Okolo AA, Ijaduola GT. The hearing profile of Nigerian school children. Int J Pediatr Otorhinolaryngol 2000; 55:173-9.
5. Vartiainen E, Kemppinen P, Karjalainen S. Prevalence and etiology of bilateral sensorineural hearing impairment in a Finnish childhood population. Int J Pediatr Otorhinolaryngol 1997; 41:175-85.
6. Olusanya BO. Hearing impairment in children with impacted cerumen. Ann Trop Paediatr 2003; 23:121-8.
7. Somefun OA, Okeowo PA, Da Lilly-Tariah OB, Beredugo BK. Reported Hearing disability in age 5 years and above in Lagos Nigeria. Niger Med J 2003: 4: 35-38.
8. Ijaduola GTA. The problems of the profoundly deaf Nigerian children. Postgraduate Doctor 1982; 180-184.
9. British Society of Audiology. Procedures for Pure Tone Audiometry. British Journal of Audiology 1988; 22: 123.
10. McCormick B. Paediatric Audiology 0-5years. McComick B(Ed). London: Whurr Publishers Ltd, 1993.
11. Lutman ME, McCormick B. Converting free-field A-weighted sound levels to hearing levels. Journal of British Association of Teacher's of the Deaf 1987; 11: 127.
12. British Society of Audiology. Descriptors for Pure Tone Audiogram. British Journal of Audiology 1981; 15: 213-216.
13. Da Lilly-Tariah OB, Ukoli CO. Aetiological factors in acquired sensorineural Hearing Loss in Jos. Niger Med J 2003; 4: 4-6.
14. Ahmad BM, Nwaorgu OGB, Nwawolo CC. Otological findings in Children from a Deaf school in Ibadan Nigeria. Sahel Med J 1999;2: 49-52.