

AETIOLOGY OF VERTIGO IN A NIGERIAN TERTIARY HEALTH FACILITY, A MULTIDISCIPLINARY APPROACH.

BY

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ABSTRACT

Background: *Vertigo is one of the most challenging problems faced by the otolaryngologist in every day practice. The aim of this study is to investigate the aetiology, and the clinical course of vertigo in our setting*

Materials and methods: *Forty-six consecutive patients attending the ENT Clinic of a Nigerian tertiary health institution with the chief complaints of vertigo were prospectively studied. The patients' history, clinical examination, the results of the laboratory investigations as well as the diagnostic imaging findings and the treatment modalities were reviewed. The patients were followed up for a minimum of 24 months.*

Results: *There were 27(58.7%) males and 19(41.3%) females. The incidence of Vertigo was found to increase with age with a peak incidence in the 6th decade of life. The aetiologies of vertigo were found to be: Infectious diseases of the ear in 9(19.6%), Neoplasm 8(17.4%), Menieres 8(17.4.3%), Metabolic diseases 5(10.9%), while vascular disorders were found in 4(8.7%). Trauma occurred in 4(8.7%), Ocular pathology in 3(6.5%), while Vestibulotoxicity was found in 2(4.3%). Others include, Psychogenic causes in 2(4.3%) and vestibular neuronitis was the least found in 1(2.2%) of the patients.*

Laboratory investigations were unremarkable in all of the cases. Fasting blood sugar was found to be elevated in one of the patients with Diabetes and VDRL tests was found to be positive in the only patients with Ootosyphilis. Electrocardiography (ECG), Vanil Mandelic Acid (VMA), and thyroid function tests were normal in those patients where these investigations were indicated. Radiological investigations were helpful in detecting Temporal bone and cerebello-pontine angle tumours. Treatment consisted of

labyrinthine sedative, the treatments of the primary cause and physiotherapy. Mortality was found in 2.2% of the patients.

Conclusion: *Infective ear diseases, Menieres' and neoplasms were found to be common. Vertigo in our centre represents an extremely broad spectrum of diagnosis. A thorough and a multidisciplinary evaluation of a vertiginous patient in a tertiary centre is hereby advocated.*

Keywords: *Vertigo, tertiary health institution, Nigeria.*

INTRODUCTION

Vertigo can be defined as hallucination or illusion of motion. This motion may be rotatory or linear, and is the most common symptom experienced when there is a dysfunction of the peripheral vestibular system¹. The vestibular system is one of the three systems by which the body orients itself in space². This system acts closely with the proprioceptive and visual systems. The collaboration with these systems manifested anatomically by the presence of central projections from the vestibular end organ². The cell bodies of the vestibular nerve are located in the scarpa's ganglion and this sends projections to the brainstem vestibular nuclei (superior, descending, latera, and media). The neurons in turn sends projection to the several Central Nervous System station, like the connection to the sympathetic nervous system, the dorsal efferent nucleus of the vagus nerve, the salivatory nucleus, the phrenic nuclei and the nucleus ambiguus².

These connections are responsible for such, manifestation as pallor, sweating, nausea and excessive salivation that often accompany vertigo. The projections from the cerebellum accounts for ataxia². These projections serve to suppress vestibular imbalance that occurs when peripheral lesion are present while the projection through the reticular formation to the cerebral cortex account for the perceived sensation of vertigo. Nystagmus are produced through the connections of ocular nerve nuclei (cranial

nerves II,III,and VI) via the medial longitudinal fascicules.

Vertigo results from lesions in diverse locations such as the inner ear, the visual/vestibular interaction centres in the brainstem and cerebellum, and the subjective sensation pathways of the thalamus or cortex³. Peripheral and central cause of vertigo can commonly be distinguished by the study of a patient's history. Nausea and vomiting are common with the vertigo of peripheral origin. Imbalance on the other hand is more severe in vertigo of central causes. The site of the lesion can easily be defined by the identification of the associated factors. Lesion of the labyrinthine or nerve (peripheral) commonly produce auditory symptoms such as hearing loss, tinnitus, a sensation of pressure in the ear, or pain in the ear⁴. Lesions of the IAM also produce tinnitus, and may be associated with ipsilateral facial weakness, while cerebello - pontine lesion may be associated with ipsilateral facial weakness, and with ipsilateral ataxia. Vertigo can also occur as a part of an aura of temporal-lobe seizures, but there are always other associated symptoms⁴.

This study was undertaken to determine the aetiology and clinical course of vertigo that are commonly seen in a Nigerian Tertiary health institution and to highlight demographic and clinical features and the management options.

PATIENTS AND METHODS

Forty-six consecutive patients of all age groups that are attending the ENT Clinic with

the chief complaints of vertigo were prospectively studied.

The study location was the Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria.

Table 1: Presenting Symptoms

Associated Presenting Symptoms	Frequency	%
Nausea	9	20.9
Vomiting	8	18.6
Tinnitus	13	30.2
Otorrhea	1	2.3
Aural Mass	3	7.0
Hearing loss	15	25.6
Pressure in the ear	2	4.7
Gait disturbance	2	4.7
Continuous headache	9	20.9
Seizure	2	4.7
Neck Pain	2	4.7
Diplopia/Blurring of vision	4	9.3
Sneezing + itchy nose	2	4.7
Head Trauma	4	9.3
Fine tremor	5	11.6
Hemiparesis	1	2.3
Facial deformity	3	7.0
Cough	1	2.3
Constipation\ change in stool calibre	1	2.3
Irrational behaviour	2	4.7

The patient's demographic data, a standardized vertigo history, findings at clinical examinations, and the result of the laboratory investigations and diagnostic imaging were entered into a questionnaire.

The patients were reviewed with the ophthalmologist, the Neurosurgeon, the Neurologist and the Psychiatrist depending on the mode of presentation of the patient.

The data from the questionnaires were analysed using descriptive statistics, that is, the simple frequency and percentages.

RESULTS

Age and sex distribution of the patients:

There are 27(58.7%) males and 19(41.3%) females. with a male: female ratio of 1.4:1.

Vertigo was found to increase with age, with the peak age incidence between the 5th –7th decades of life (Fig 1.)

Associated Symptoms

Table I showed the associated symptoms. Tinnitus, Hearing loss, Vomiting and continuous headache are the 4 most common associated symptoms.

Duration of onset, and the duration of each episode of vertigo

Table II showed that most of the patients presented within six month of onset while late presentation was observed in some patients. While figure 2 showed the duration of each episodes. Episodes lasting for few seconds were found more in patients with peripheral vestibular diseases, while persistent, episode were found to be more common in intracranial space occupying disease.

The summaries of the physical examination, laboratory findings and the aetiological diagnosis in vertiginous patients are shown in Tables III, IV, V

Fig 1: Age + Sex Distribution of Vertigo

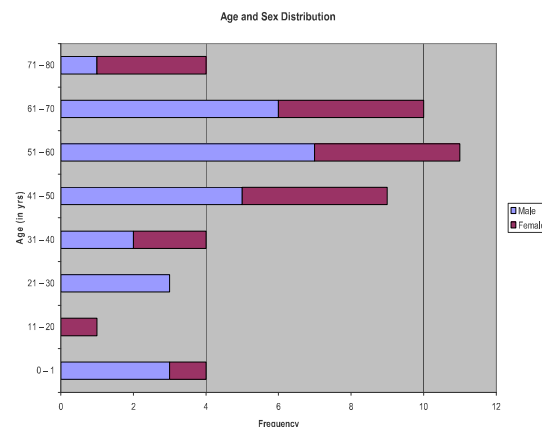


Fig. 2: Duration of episode of vertigo

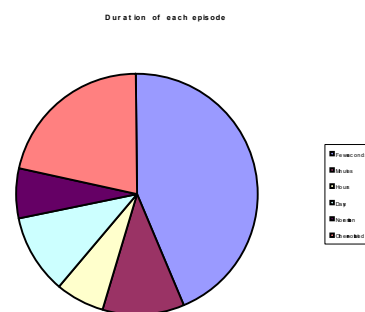


Table II
Duration of onset of Vertigo before presentation

Duration in months	Frequency
1 – 6	15
7 – 12	3
12 – 18	2
19 – 24	1
>36	2

Table III
Summary of the associated clinical findings in patients with vertigo

	Freq-ency	%
Anaemia	3	6.5
Acutely ill-looking	2	4.3
Perforated Tympanic membrane (TM)	2	4.3
Inflamed TM	2	4.3
Herpes Zooster Oticus	2	4.3
Multiple Cranial nerves palsy	2	4.3
7 th cranial nerve palsy	3	6.5
Hemiparesis	1	2.2
Spontaneous Nystagmus	2	4.3
Proptosis	1	2.2
Romberg test positive	2	4.3
Past pointing	2	4.3
Gibbus + cervical tenderness	1	2.2
High Blood Pressure	1	2.2
Ataxia	4	8.7
Fine tremor	2	4.7
CSF Otorrhea	1	2.3
Impaired mental State	2	4.3

DISCUSSION

Vertigo is one of the most challenging problems faced by the otorhinolaryngologist in everyday practice¹. The patient's history is usually the key to differentiation of peripheral and central causes of vertigo⁴. The object of this study is therefore to evaluate the causes and the clinical course, and treatment of vertigo in Nigerian patients that are seen at one of the tertiary health institution in the South Western part of the country.

Table IV

A summary of the investigation profile of patients presenting with vertigo.

Complete Blood Count	Anaemia was found in 3cases (6.5%)
Electrolyte and Urea, and urinalysis	Normal in 90% where result are obtainable
VDRL test	Positive in 1(2.2%)
Sputum for AFB	Positive for acid-fast bacilli in 2 (4.3%)
Thyroid function test	Elevated in 2 (4.3%) with thyrotoxicosis
ESR	Elevated in 1 (2.2%)
EEG	Abnormal in one case
ECG	Hypertensive Heart disease in 4 (8.7%)
Van Mandelic Acid Assay	Normal done in a case (2.2%) where it was indicated
Cervical spondylosis	Present in 4(8.7%)
X-ray Sinuses SMV	Mucosal thickening; Allergic sinusitis in 1 (2.2%), Nasopharyngeal carcinoma 2(4.3%)
Refraction	Presbyopia in 4(8.7%)
PTA and tympanometry.	Bilateral SNHL 6(23.8%) Conductive deafness in 4(8.7%)
Post Mortem -	Intracerebra, cerebella, intracranial venous sinus thrombosis and subdural abscess in 1 (2.2%)
CT Scan	Below are the list of tumours that were found associated with vertigo CPA tumour (Meningioma) 1(2.2%) Glomus tumour 1(2.2%) Ewing's tumour of the temporal bone 1(2.2%) Metastasis to the temporal bone from colorectal adenocarcinoma. 1(2.2%) Multiple Myeloma 1(2.2%) Adenocarcinoma of the middle Ear 1(2.2%)

Table V: Showing the aetiology of vertigo in the study population.

Aetiology of Vertigo	Frequency	%
A Ear Infections Herpes zoster Oticus (2) Labyrinthitis (2), AOM (3), CSOM (1), Otitis media (1)	9	19.5
B Menieres	8	17.3
C Tumour\ Neoplasm	8	17.3
D Metabolic Diabetes Mellitus (2) Thyrotoxicosis (2), Hypoglycemia after breastfeeding (1)	5	10.9
E Vascular disorder	4	8.7
F Trauma FB left ear (1) Basal skull # with CSF Otorrhea with Head injury (3)	4	8.74. 3
G Ocular Cataract (2) Glaucoma (Post Trabeculectomy) (1)	3	6.5
I Toxic Agents Streptomycin(2)		
J Vestibular Neuronitis	1	2.2
Total	46	100

The sample of patients studied represents a wide range of socio economic group from within the region.

There were more males than females presenting with vertigo. The age at presentation –ranged from 3 – 80 years. The incidence of vertigo was found to increase with age in this study group. Sloane also reported an increasing prevalence of vertigo with advancing age⁵. This could be due to specific disease processes superimposed on normal ageing physiology.

The most common diagnosis was ear infections either due to bacteria or viral agents, Menieres,

Neoplasm, Labyrinthine concussion from Head injury and vascular related disorders, while benign positional vertigo was not seen in this study population (Table V). Labyrinthitis and otitis media were found to be also more common in a study on management of dizziness in primary care⁶. Menieres was found to be the second most common cause of vertigo in this study, it was found to be as common as neoplasm as a cause of vertigo in our center. Menieres was found to be the most common cause of vertigo in the literature^{7, 8, 9}.

Neoplasm of temporal bone was found in 7.9% of cases, this figure is high when compared with the literature^{7, 8, 9}. The fact that our hospital is one of the few centers in the country with CT scanning facilities may be responsible for the high pick up rate of the cases with neoplasm. A multidisciplinary evaluation of these patients might also be responsible for the high prevalence of neoplasm found in this study. There is, however, a need for further work on the true prevalence of neoplasm as a cause of vertigo in our environment.

Benign positional vertigo was not found in any of the studied patients. This is in contrast to the work of Baloh and Luxon who both found benign positional vertigo (BPV) to be the most common cause of vertigo^{2, 9}. There is a need for further research to determine whether there is a racial factor involved in the incidence of BPV.

Routine laboratory investigations like the full blood count; electrolyte and urea were found to be normal in about 92% of cases (Table IV). Chronic anemia in three patients was found to be associated with the underlying disease such as in patients with tuberculosis and the neglected case of chronic suppurative otitis media.

Venereal Disease Research Laboratory (VDRL) test was done in all patients and positive in the only case with otosyphillis. The need to routinely screen a patient with vertigo for otosyphillis in our environment should not be ignored. Other biochemical tests that were done were all

within normal limit. Electocardiomyography revealed hypertensive heart disease pattern, Electroencephalography (EEG) in the patient with seizure was consistent with grand mal epilepsy. Radiological investigation both plain and CT scan were found to be very helpful in patients with Neoplasm. Internal Acoustic Meatus tomograms views were routinely done on all patients with vertigo. This was found to be sensitive only in diagnosing cases that are secondary to neoplasm involving the temporal bone. CT scan of the skull in some of the patients with vertigo was found to have an extensive Neoplasm involving the temporal bone or the cerebello-pontine angle.

It is hereby suggested that where facility is available for CT scan, all patients presenting with vertigo in a tertiary hospital setting in developing countries should have CT, unless the history and clinical findings advice otherwise. This will help to establish the true prevalence of temporal bone neoplasm and help in early diagnosis. All the patients with the neoplastic lesions in this study presented with an extensive lesions. In one of the cases, the patient had a primary Colo-rectal Adenocarcinoma with metastasis to the temporal bone. The patients were followed up for a minimum of 24 months. Labyrinthine sedative was effective in the management of over 90% of the patients in addition to the treatment of the primary cause. Only in one case of incapacitating vestibular collapse secondary to viral labyrinthitis did we have to employ Cawthorne vestibular exercises with the help of the physiotherapist. Patients with ocular problems did well after the cataract and glaucoma surgery and patients with the psychogenic causes were evaluated by the psychiatrist and placed on the appropriate medication. All the patients with the exception of the cases with neoplasm did well on therapy and there has been no recurrence over the last 24 months.

The patients with neoplasm presented with advanced disease, and all of them declined surgery due to financial constraints.

Vertigo may be the presenting complaints in a plethora of clinical conditions. The patient's

history is usually the key to the differentiation of the causes. Infective ear conditions, neoplasm, Menieres, and labyrinthine concussion from head injury were found to be the most common etiology in our review. We recommend a multidisciplinary approach to the management of a patient presenting with vertigo so as to allow for the early diagnosis of neoplastic causes and for effective management and rehabilitation of these patients.

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