Int. Adv. Otol. 2012; 8:(3) 434-437

CLINICAL REPORT

A Five-Year Descriptive Study: Our Hospitalized Children with Vertigo

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Purpose: Several authors have focused on researching the prevalence of vertigo in children. However, we did not find any paper whatsoever where the authors indicated how many of these children required hospital admission.

Material and Method: We made a retrospective analysis of all recorded cases of children who were admitted to our Hospital between 2005 and 2010 because of vertigo. We described their etiologies, which have been rare in relation to those described as common in the published series including patients irrespective of hospital admission, and we reviewed the literature.

Result: Through the data collection period, 1.15% of the children hospitalized in the Otolaryngology Department had vertigo or imbalance. The median age of our group of patients was 9 years old. The mean length of stay at the hospital was 10 days.

Conclusion: When children have severe symptoms of vertigo, etiologies usually described as more frequent in the literature are not present. For this reason it is necessary to bring to light which pathologies are the most prevalent in this particular group of patients.

Submitted : 18 June 2012 *Revised : 23 October 2012* *Accepted : 30 October 2012*

Introduction

The real medical meaning of the word vertigo is the sensation of rotation of the environment or the body itself. However, an imbalance sometimes occurs after the vertigo crisis [1].

Pediatric vertigo and imbalance are not easily recognized and they are probably underdiagnosed [2]. Dizziness in children is probably not rare, about 15% of children reported to have had dizziness, but it represents less than 1% of visits to the ENT [3]. It even more rarely requires the patient's hospitalization because it is usually well tolerated.

Materials and Method

We collected the Hospital's recorded admissions of all in-patients with vertigo or imbalance, according to the ICD 9, during 5 years (January 2005 - January 2010).

Our Hospital serves 138,420 beneficiaries under 14 years of age. (December 2007). The admission criteria are patients with vertigo and severe, disabling symptoms or signs of neurological disorder detected during the physical examination. In our country, health care policies are based on universal, free health care.

Files have been revised from the database of the Hospital Admissions Department. This is a retrospective and descriptive study.

All patients underwent an otolaryngological, neurological and/or ophthalmological examination.

Pure tone audiometries were performed using a clinical audiometer AC 40 (interacoustics A / S, DK-5610, Assens, Denmark), vestibular tests were performed using a VF405 videonystagmograph (interacoustics A / S, DK-5610, Assens, Denmark).

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Caloric tests were performed using air stimulator HOMOTH (Homoth medizinelecktronik Baumacker GMBH & Co., 22523 Hamburg, Germany).

MRI (Magnetic Resonance Imaging) studies were performed in all patients.

Case Reports

2410 children were hospitalized in the Otolaryngology Department during the data collection period. 433 of them were admitted from the Emergency Department and only five children had vertigo or imbalance (1.15%). Sex distribution was 3 girls and 2 boys. The ages of the patients were between 5 and 13 years old, the median was at 9 years. The mean length of stay at the hospital was 10 days.

Case 1

Girl, 5 years old, 4-day history of headache, fever, vomiting and dizziness.

Conscious, no signs of meningism, but showed instability, ataxia, upgaze nystagmus with and without Frenzel's glasses lasting seconds and photophobia. Otoscopy was normal.

Lumbar puncture showed 112 mm^3 (98% segmented and 2% polymorphonuclear), total protein 111.5 mg / dl and glucose 53 mg / dl.

She was diagnosed with viral meningitis and treated with intravenous Ganciclovir because the cerebrospinal fluid culture was positive for herpes simplex virus 6 resistant to acyclovir and Ganciclovir sensitive.

The improvement of the patient was gradual, 4 days later she had improved seating and we performed an ABR, spinal and cranial MRI and EEG—which were normal.

The seating was normalized 4 days later, and she started to walk. Ganciclovir was then suspended, and 2 days later the symptoms disappeared and the girl was discharged.

The patient is currently asymptomatic and without sequelae.

Case 2

Male, 8 years old. 48 hours of vomiting, dizziness and unsteadiness. This crisis began after playing a video game and it lasted about 5 minutes. After this, he suffered several episodes more when he moved. He had a right ear hearing loss and was afebrile. Neurological examination showed ataxia, Romberg (with right deviation) and hyporeflexia. Otoscopy revealed congestive right eardrum. He also showed first-degree left nystagmus in compliance with Alexander's law.

Laboratory tests and MRI of the brainstem were normal.

He was diagnosed with suppurative acute labyrinthitis and otitis media on the right ear.

Treatment with cefotaxime and methylprednisolone was established and a myringocentesis was done under general anesthesia. 24 hours afterwards, clinical improvement was appreciated. We found that the patient had a sensorineural hearing loss in the right ear for frequencies higher than 2 KHz. (Fig. 1)

Bacterial culture from otitis was positive for streptococcus pneumoniae.

At discharge, after 9 days of intravenous therapy, the patient was asymptomatic.

He has not had dizziness again and his hearing loss remains stable.

Case 3

Female patient, 13 years old. 24-hour sensation of continuous rotation of objects, which increases with movement. Nausea, vomiting and sweating. Otoscopy was normal.

She shows first-degree right nystagmus which becomes second degree nystagmus when we used the Frenzel's glasses. It was accompanied by Romberg, Fukuda and Barany tests lateralized to the left side. Neurological examination was normal.

Laboratory test and Tone audiometry were normal.

The diagnosis was acute peripheral vestibulopathy, probably vestibular left neuritis, and we treated the patient with vestibular sedatives, sulpiride. 48 hours afterwards, the patient did not feel better and she started experiencing diplopia. She was examined by Neurology and Ophthalmology and an MRI was requested: everything was normal.

The result of caloric testing video nystagmography was vestibular deficit, 53% left weakness and 12% right directional preponderance. The dizziness disappeared 5 days after admission, but the diplopia did not. A mild paresis of the inferior oblique muscle in her

right eye was found. Sulpiride was suspended and diplopia disappeared within 24 hours. At 9 days of admission she was asymptomatic. She has not presented vestibular problems since then.

Case 4

Female patient, 12 years old. Feeling of continuous rotation of environment for 6 days now. Nausea, vomiting and sweating. No oral tolerance. Laboratory and Biochemistry test were normal.

Otolaryngolical, neurological and ophthalmological examinations, pure tone audiometry and Brain MRI were normal too.

She was treated with fluid therapy only and she improved clinically in 72 hours.

Her family environment was unstructured. She was asymptomatic 5 days after admission without any other treatment. We think she had a psychogenic vertigo.

Case 5

12 year-old male patient who came to the Pediatric Emergency Service because of sensation of rotatory motion for 7 days. It had sudden onset. He had nausea, vomiting and sweating. Also referred headache episodes unrelated to vertigo crisis.

Barany and Romberg tests showed a left deviation; and a second-degree vertical nystagmus (fast phase) was observed. No other central neurological signs were found.

The MRI identified a right cerebellopontine angle tumor of 4 x 3 cm, T2 hyperintense and T1 hypointense that behaves like looking intraaxial, originated in the right cerebellar peduncle. The likely diagnosis was glioma. (Fig 2)

6 days later the patient was operated by the neurosurgical team. The intraoperative biopsy diagnosed an undifferentiated glioma grade IV, which was partially removed. The patient died 5 days after surgery because of brain edema and intracranial hypertension.

Discussion

The real medical meaning of the word is a sense of rotation of the environment or the body itself. Not all vestibular pathologies cause dizziness, some can produce imbalance. Not all vertigos have a vestibular origin. [1]

Dizziness in children is probably not rare. In two studies, 8% and 15% reported vertigo in the previous year [4], although they represent less than 1% of the medical appointments in otolaryngology [3], and even more rarely they require hospital admission because its duration in most cases is short and they are well tolerated.

In most series, benign paroxysmal vertigo in children is the most frequent diagnosis. [2,5]. This is defined as a childhood periodic syndrome. It is included in the Classification of Headache Disorders of the International Headache Society, section 1.3.3, second edition (ICHD-2).

The available literature usually describes inpatients and outpatients with vertigo undifferentiately [2-7]. Viral meningitis, labyrinthitis, vestibular neuritis or brain tumor are rare in these series. [2, 6, 7]

Labyrinthitis is caused by inflammation of the inner ear and is usually serous. But it can be suppurative when bacteria reach the labyrinth. Symptoms are the same for both, but the nystagmus' fast phase tends towards the healthy ear and segmental deviations go towards the affected side with bacterial labyrinthitis. Perceptive hearing loss is almost constant and deep. In both cases tympanocentesis, insertion of ear tubes, antibiotic therapy and vestibular sedatives are recommended.

The prevalence of psychogenic vertigo in children is unclear; nearly 10% of the cases could be of this nature, with depression being the most common of the psychiatric disorders [8].

Headache occurs in 4 of our 5 cases. Hearing loss was identified in case 2, it was sensorineural and fortunately it only affected high frequencies. None of the patients reported tinnitus.

To summarize, most common causes of vertigo in childhood described in the literature are not present when patients require admission. These patients will experience severe, disabling symptoms or central or neurologic pathologies, and they made up just 1.15% of children hospitalized in our Otolaryngology Department through the data collection period. For this reason it is necessary to bring to light which pathologies are the most prevalent in this particular group of patients, since they produce the most stress to their families and physicians.

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