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Minireview

Update in Balance Disturbances in Children: How to Diagnose?

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Balance is one of the most important skills developed during children's first years. It is so important that doctors are used to follow motor milestones like head control, sitting and walking as important patterns of development. Balance disturbances are associated with higher chances of attention deficit disorder, learning problems, intellectual disability, difficulty dealing with emotions, concentration and behavior [1]. Because balance is a skill learned over time, it can be difficult to identify when something is wrong. Depending on the age, children may not be able to explain to an adult how they feel, so it's extremely important to have someone close, paying attention to their balance skills. Balance disturbances are not common in children. The known prevalence is around 5-15%, depending on the literature [2,3]. History is the most important part of any diagnosis, but it may be challenging to elucidate in a child due to limitations in communication abilities and vocabulary. Reports of the child caregiver is fundamental at this point.

Guidelines for evaluation, diagnosis and treatment of children with vertigo were not available over the years. That is why it is difficult to find a pattern among centers and the range of exams are wide. Neurological, ophthalmological and ENT examinations, imaging studies and audiological evaluation were the most common, and they had one goal in mind: ensure that the child's symptoms were caused by the vestibular system and not attributed to another disorder. The most common vestibular cause associated with vertigo in children over the years was the Benign Paroxysmal Vertigo of Childhood (BPVC). The first description of this condition was made by Basser and it was a recurrent spontaneous attack of vertigo frequently associated with vomiting, pallor, fearfulness, postural imbalance, ataxia and/or nystagmus in otherwise healthy children [4]. The main difficulty with this description was to differ BPVC from Vestibular Migraine, the second most common cause of vertigo in childhood. The diagnostic criteria were first defined by Neuhauser in 2001 and age was not specified [5].

In 2018, the International Classification of Headache Disorders established the diagnostic criteria used today, requiring at least five episodes of vestibular symptoms of moderate to severe intensity, lasting between five minutes and 72 hours, a lifetime of migraine headaches and migraine symptoms during most of the attacks [6]. As you can see, all these criteria depend on history taking. Child examination is also important, although it depends on the patient's cooperation. The examiner must keep in mind that a child evaluation needs to be as fast as possible and as child friendly as possible. Trying to perform a full neurotology evaluation will be exhausting and probably will not work out as expected. This is also one of the reasons why published articles differ so much, since there is no standardized examination protocol for children. All these difficulties and doubts about vestibular symptoms in childhood, brought together a group of specialists from Bárány Society.

After a wide review of the literature the first consensus document on childhood vestibular symptoms was presented in 2021. Two diagnostic criteria were presented: Recurrent Vertigo of Childhood (presented to replace the term BPVC) and Vestibular Migraine of Childhood (VMC). To diagnose Recurrent Vertigo of Childhood (RVC) it is necessary to determine at least three episodes of vestibular symptoms from moderate to severe intensity in children under 18 years old, lasting between 1 minute and 72 hours. It is also fundamental to exclude any signs of VMC [7]. Vestibular migraine of childhood was divided in two possible diagnoses. Definite VMC should have at least five episodes with vestibular symptoms of moderate or severe intensity, lasting between five minutes and 72 hours, a current or past history of

migraine with or with-out aura (B), and at least half of the episodes must be associated with migraine features (C).

Possible VMC needs only three episodes of vestibular symptoms and one of the criteria of migraine (B or C). These criteria are specific for children under 18 years old [7]. The development of these criteria in an important step not only for clinicians to make a proper diagnosis, but also for future publications on this field. The document also reviews various causes of vertigo in childhood and the importance of hearing problems associated with balance disturbances. Although the consensus does not suggest a standardized examination of children with vertigo, many authors consider three fundamental steps: (1) follow motor milestones, (2) one foot stand test (30 months – briefly, 36 months – 2 s, 4 years – 5 s, 5 years – 10 s) and (3) head impulse test [8]. Complementary examination could be necessary. Audiological evaluation is fundamental, and the video-head impulse test is an easy and fast way to perform a vestibular evaluation.

Much has changed in childhood vertigo evaluation. It is important to remember that history taking and clinical evaluation remain the basis for a good diagnosis, even though the vestibular lab (complementary exams) has grown substantially over the years. ENT doctors, neurologists and pediatricians should be aware of balance disorders and actively question caregivers about it.

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