

be determined. Syncope resulting in short, shallow hypoperfusion will elicit signs corresponding to the slow EEG pattern, whereas a cause resulting in a quick circulatory standstill will result in signs typical of slow-flat-slow EEG pattern. Whereas eyes are open in syncope and in seizures, they are commonly closed in psychogenic attacks [1]. (van Dijk JG, Thijs RD, van Zwet E, et al. The semiology of tilt-induced reflex syncope in relation to electroencephalographic changes. **Brain** 2014 Feb;137(Pt 2):576-85).

COMMENTARY. Syncope is defined as a transient loss of consciousness resulting from cerebral hypoperfusion/hypoxia. Vasovagal reflex syncope is the most common form of syncope, sometimes called neurocardiogenic or neurally mediated syncope. The autonomic nervous system is activated, resulting in low blood pressure, decreased cardiac output, vasodilatation and bradycardia. Recognized usually by the pattern of symptoms and signs only, the present study provides a correlation between symptoms, signs, video and EEG data, leading toward a more definite diagnosis. Vasovagal syncope is differentiated from other, rare causes of syncope, including cardiac (ventricular tachycardia, long QT syndrome, Wolff-Parkinson-White syndrome, and atrioventricular block), and non-cardiovascular pseudo-syncope (reflex anoxic seizures or psychogenic causes) [2].

The differentiation of syncope from seizure (faint from fit) [3] is often difficult. One authority finds in patients presenting with anoxic-epileptic seizures the epileptic component is usually clonic, whereas the nonepileptic convulsive syncope is an arrhythmic tonic extension or spasm [4]. Opisthotonus is common in asystolic syncope in young children but was not seen in the present cohort of older patients [5]. In a study of 141 children referred for evaluation of syncope, 78% had simple neurocardiogenic syncope, 38% had syncopal convulsions, and 2.8% had concurrent epilepsy. The EEG performed in 91 (64%) subjects was diagnostic for epilepsy in 1 (1.4%). MRI, and/or EKG/Holter monitoring/stress testing were primarily normal or nondiagnostic. A detailed medical history was the most useful diagnostic tool [6].

References.

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HEADACHE DISORDERS

POST-LUMBAR PUNCTURE HEADACHE AND NEEDLE GAUGE

Investigators from the Oncology Unit, Royal Children's Hospital, Melbourne, Australia, compared the frequency of headache and procedure time following lumbar puncture (LP) in a randomized crossover trial using a 25-gauge compared to a 22-gauge needle. LP headache occurs within 7 days after the procedure, becomes worse within 1.5 min of standing up and improves within 30 min of lying down. As part of their treatment

for leukemia, 93 children, aged 4-15 years, were allocated a random sequence of 4 LPs, two with a 22-gauge needle and two with a 25-gauge needle, all performed under general anesthesia (sevoflurane). A single needle insertion was used in 320 (94%) procedures; multiple attempts were required in 21 (9 with 22-gauge needle and 12 with 25-gauge (p=0.5).

Analysis of 341 LPs showed an incidence of 7.2% post-LP headache that followed the use of a 22-gauge needle was not significantly different from an incidence of 4.6% when using a 25-gauge needle (p=0.3). Also, the incidence of any headache following LP was not related to needle size (18% with 22-gauge needle and 15% with 25-gauge needle; p=0.4). Having one LP headache did not predispose to recurrence; only one child had two LP headaches. LP procedure time (time for collection of 22 drops [1 ml] CSF) was doubled when using the 25-gauge needle. Incidence of post-LP headache was not lower in younger children and was unrelated to age; it was higher in girls than in boys (11% vs 3%, respectively, p=0.014). The overall functional impact of post-LP headache in a child with leukemia was assessed as moderate or severe in 55% of families. (Crock C, Orsini F, Lee KJ, Phillips RJ. Headache after lumbar puncture: randomized crossover trial of 22-gauge versus 25-gauge needles. **Arch Dis Child** 2014 Mar;99(3):203-7).

COMMENTARY. Incidence of post-LP headache in children treated for leukemia is higher following use of a 22-gauge compared to a 25-gauge needle, but the difference is not significant. The authors conclude that either gauge may be appropriate for LP in a child. In contrast, adults have a significantly lower incidence of LP headache when using smaller diameter needles and needles with a blunt, pencil-type point rather than the traditional cutting point [1][2].

References.

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ROLE OF PACAP IN MIGRAINE HEADACHES

Investigators at Danish Headache Centre, University of Copenhagen, Glostrup, Denmark, studied the incidence of migraine during and after intravenous infusion of pituitary adenylate cyclase-activating polypeptide-38 (PACAP38) and vasoactive intestinal polypeptide (VIP) in 22 female migraine patients without aura (mean age 24 years [range 19-36]). Sixteen patients (73%) reported migraine-like attacks after PACAP38 and 4 after VIP (18%) infusion (P=0.002). Three of 4 patients who reported migraine-like attacks after VIP also reported attacks after PACAP38. Both peptides induced dilatation of extracranial (P<0.05) but not intracranial arteries (P>0.05). PACAP38-induced vasodilatation lasted >2 h whereas VIP-induced dilatation was normalized after 2 h. Plasma PACAP38 levels were elevated at 1 h after starting infusion only in patients who reported migraine attacks. PACAP38 has a high affinity for the PAC1 receptor. Activation of the PAC1 receptor may explain the mechanism of migraine and offer a target for development of anti-migraine drugs. (Amin FM, Hougaard A, et al. Investigation of the pathophysiological mechanisms of migraine attacks induced by pituitary adenylate cyclase-activating polypeptide-38. **Brain** 2014 Mar;137:779-94).