

Bathing epilepsy: a video case of an autonomic seizure

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ABSTRACT – A six-year-old Moroccan boy experienced nausea, paleness and oral automatisms after almost every shower. A clinical diagnosis of bathing epilepsy was assumed. A video-EEG recording was taken during and after a shower and confirmed ictal high voltage repetitive slow waves over the left temporal lobe. Bathing epilepsy or water immersion epilepsy is a rare form of reflex epilepsy often presenting with autonomic seizures. The onset is usually in the first year of life and the evolution is benign. [*Published with video sequences*]

Key words: bathing epilepsy, water immersion epilepsy, autonomic seizures

Bathing epilepsy, also called water immersion epilepsy, is a rare condition. Bathing epilepsy can be considered as a form of reflex epilepsy. The stimulus for seizure onset is often complex and is a combination of contact with water combined with other specific precipitating factors. Hot water epilepsy is distinct from bathing epilepsy; the precipitating factor being the immersion in water of high temperature. Seizures can manifest as generalised or complex partial seizures, typically with autonomic symptoms. While cases of hot water epilepsy are reported in India and Turkey, isolated cases are also reported all over the world.

This case study is an example of a bath-induced complex partial seizure with autonomic symptoms in a Moroccan boy with an unusual later age of onset.

the age of two, he became very quiet and pale, felt nauseous and sometimes vomited immediately after showering.

Medical history was negative. His psychomotor development was normal. According to the family history, a sibling developed seizures after herpes encephalitis. Clinical neurological examination on admission was normal. Blood examination, including complement factors, tryptase, cryoglobulins and methemoglobin appeared normal. MRI of the brain was normal. Interictal EEG revealed no epileptic abnormalities. During video-EEG monitoring, a seizure was provoked by taking a shower. The temperature of the water was 37°C. Almost immediately after the shower, the patient became quiet but still responsive. He was dried with a towel by his sister. Twenty seconds later he became pale and presented with oral automatisms. According to the EEG, the epileptic activity was absent at this moment. After 60 seconds, he lost his balance and had to sit down. The duration of the typical seizure was three minutes and stopped spontaneously. After the



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Case report

A six-year-old Moroccan boy presented with paroxysms after taking a shower (*see video sequence*). Since

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seizure the boy felt extremely tired and fell asleep. According to the sister, this was the typical seizure he experienced after a shower.

Twenty-four-hour video-EEG monitoring showed a normal background rhythm and photic stimulation did not provoke epileptic discharges. The onset of the seizure was marked by irregular delta activity over the left anterior temporal lobe, becoming more regular and higher in amplitude during the seizure and spreading unilaterally to the rest of the temporal lobe (*figure 1*). Treatment with carbamazepine was started but was discontinued as instructed by the parents because of side-effects. The boy became seizure free with levetiracetam (30/mg/kg/day).

Discussion

Bathing epilepsy is a rare form of reflex epilepsy with onset usually in the first year. A male predominance is observed in most case series (Nechay and Stephenson, 2009). Patients have a normal psychomotor development and clinical examination.

While the precipitating factor for most of the patients with hot water epilepsy seems to be the pouring of water over the head, in most infants with bathing epilepsy it is immersion in the bath, and in some patients, multiple specific stimuli contribute to the seizure onset. Termination of the bath was an important trigger in eight patients with hot water epilepsy in the case series of Yalcin *et al.* (2006), and this seems to be so in our case of bathing epilepsy. The type of seizure is usually complex partial, with or without secondary generalisation. Autonomic symptoms can be prominent (De Keyzer *et al.*, 2005; Ceulemans *et al.*, 2008).

Ictal EEG is seldom obtained for patients with hot water or bathing epilepsy. For hot water epilepsy, typical ictal abnormalities are focal unilateral temporal abnormalities characterized by rhythmic slow wave activity with high amplitude (loos *et al.*, 2000). In our case of bathing epilepsy, seizure onset was documented in the temporal lobe. Interictal EEG and imaging in patients with bathing epilepsy is normal in most of the cases.

There seems to be a high rate of familial epilepsy in patients with hot water epilepsy, suggesting a genetic



Figure 1. EEG recording of seizure onset. Arrow marks 20 seconds following the end of a shower and onset of irregular slow waves over the left temporal region.

predisposition (Yalcin *et al.*, 2006). Only recently has genome-wide linkage analysis been performed in two families with hot water epilepsy. Significant linkage was detected on chromosome 4q24-q28 and 10q21.3-q21.4 (Ratnapriya *et al.*, 2009a, 2009b). However, no genetic basis for simple bathing epilepsy has been suggested. Differential diagnosis with other paroxysmal disorders during bathing should be made, such as alternating hemiplegia of childhood (Incorpora *et al.*, 2008, 2010), hyperekplexia and paroxysmal extreme pain disorder, aquagenic urticaria and syncope (Nechay and Stephenson, 2009). In the comprehensive review of Nechay and Stephenson (2009), it was suggested that reported cases of aquagenic urticaria and syncope were in fact probably examples of bathing epilepsy. Treatment usually involves avoiding putting the infant in a bath. The prognosis for this form of epilepsy is good with spontaneous remission and normal psychomotor development (Argumosa, 2002). □

Disclosure.

None of the authors has any conflict of interest or financial support to disclose.

Legend for video sequence

Video shows a seizure after taking a shower.

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