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Letter to the editor

Extensor plantar response elicited by passive head flexion

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Various methods of eliciting the extensor plantar response (upgoing toe through action of the extensor hallucis longus muscle in concert with one or more other flexor muscles of the leg) have been reported (3). Among these the most well known is the method described by Babinski (Babinski sign) (3). Eliciting an extensor plantar response by head anteflexion has not been reported.

In a 75-yo woman, height 161 cm, weight 63 kg, with a history of Wertheim surgery, shrinking kidneys, chronic renal insufficiency leading to hemodialysis since 3 weeks prior, anemia, arterial hypertension, heart failure, cataract, liver cysts, and hypothyroidism, disorientation and confusional state became apparent. A continuous cognitive decline has been already noted since several months before.

Clinical neurologic examination showed disorientation for all qualities, wasting of the facial muscles, a positive Brudzinski sign, diffuse weakness (M5-), wasting of the upper and lower limb muscles, and reduced Achilles tendon reflexes. Passively anteflecting the head to test the Brudzinski sign, repeatedly and reproducibly elicited an extensor plantar response on the left side (Fig. 1). The plantar response was also extensor when elicited in the ordinary way by Babinski's method.

FIG. 1. — Eliciting an extensor plantar response in the described patient by passive head flexion.

Blood-work revealed marked renal insufficiency with metabolic acidosis, anemia, elevated alpha-amylase, hypothyroidism, reduced phosphorus, increased calcium, and hyperparathyroidism. A cerebral CT scan showed prominent basal ganglia lacunas bilaterally, and previous left anterior and posterior border zone infarctions. An MRI of the cerebrum disclosed a recent ischemic infarction in the left posterior border-zone, marked leucaraiosis, patchy lesions within the parieto-occipital white matter, a lacuna in the pons, various lacunas in the basal ganglia bilaterally, and diffuse atrophy. The upper segments of the cervical spine did not show an abnormal signal. Meningitis, carcinomatosis and subarachnoid bleeding were excluded upon the favorable further course Though not confirmed by more extensive and specific investigations, a mitochondrial disorder was suspected.

Usually, an extensor plantar response is elicited by continuous stroking of the lateral plantar surface of the foot and the transverse arch to the metatarsophalangeal joint in a single movement with a firm object or by the thumb-nail-drag method (Babinski sign) (3, 5). Other methods to elicit the extensor plantar response have been proposed by Chaddock, Gordon, Oppenheim, Gonda, Stransky, Rossolimo, Mendel and Bechterew, Schäfer, Bing, Moniz, Throckmorton, Strumpell, and Cornell (3). Unfortunately, there are no systematic studies available on the reliability of eliciting the plantar response by

these techniques. Though recent studies have challenged the value of eliciting the plantar response during clinical neurologic examination (6), the extensor plantar response has been proved reliable to indicate dysfunction of fibers of the cortico-spinal tract (3, 4). The sign is mediated by the extensor hallucis longus muscle (4). Flexor synergy afferents are apparently dis-inhibited by loss of upper motor neurone control over lower motor neurones and its receptive field may extend to the entire leg (2, 4). The Babinski sign thus indicates withdrawal of supra-spinal control of the flexor reflex synergy of the lower limbs and recruitment of the extensor hallucis into the extensor reflex (2, 3). The phenomenon presented here could be explained by a lesion of the cortico-spinal tract from the multiple brain infarcts or uremic enecephalopathy or a non-disclosed metabolic defect, resulting in a release of the withdrawal reflex particularly recruitment of the extensor hallucis muscle into the synergy. A spinal pathology, which could be also responsible for the phenomenon, was unfortunately, not excluded. Passive head ante-flexion acted as the stimulus to make the dis-inhibition of the withdrawal synergy apparent. Previous studies have already shown that the stimulus for eliciting an extensor plantar response may be far away from the legs (1). That the described phenomenon merely represents up-going toes outside the flexor synergy is unlikely (2).

This case shows that an extensor plantar response may be elicited by passively ante-flecting the head for testing the Brudzinski sign. This unusual way of triggering the extensor plantar response may occur in patients with vascular or uremic encephalopathy. Passive ante-flexion should be added as a possible trigger of the extensor plantar response.

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