

From the Pages of History

ABOUT THE BABINSKI SIGN

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Chettinad Health City Medical Journal 2014; 3(1):35



Joseph F.F. Babinski

Joseph Babinski, who was associated with Charcot in Paris, in 1896, while working on clinical signs to differentiate organic from nonorganic diseases, described the extensor response of the toes in a short presentation at the Société de Biologie meeting, emphasizing the sign to organic disorders of the central nervous system.

The salient features of this presentation were:

- The sign occurred in cases of hemi- or monoplegia of organic central nervous system origin.
- To a painful, pricking stimulus on the sole of the foot: (1) The healthy side showed flexion of thigh, leg, foot, and toes; (2) The paralyzed side showed flexion of thigh, leg, foot, but the toes extended.
- The sign occurred as early as a few days after the onset of weakness.
- The sign persisted in the context of chronic weakness (*vide infra*)

Babinski's Original Presentation

(translated from "Sur le réflexe cutané plantaire dans certaines affections organiques du système nerveux central. C R Soc Biol 1896;48:207-208") **"On the Plantar Cutaneous Reflex Seen in Certain Organic Disorders of the Central Nervous System,"**

by J. Babinski.

"In a certain number of cases of hemi- or crural mono-plegia due to lesions of the central nervous system, I have observed an abnormality in the cutaneous plantar reflex herein described. On the healthy side, pricking the plantar surface causes on the healthy side a normal flexion of the thigh, the leg, foot, and the toes at the metatarsal joint. On the paralyzed side, similar stimulation causes flexion of the thigh, leg and foot, but the toes, instead of flexing, develop an extension movement at the metatarsal joint.

I have seen this phenomenon in cases of new-onset hemiplegia within the first few days of weakness as well in late cases of several months duration; I have noticed it among patients unable to move their toes voluntarily as well as in patients who can move their toes, but in this latter case, the sign is not always present.

In cases of paraplegia due to a structural lesion of the spinal cord, I have also seen toe extension after pricking the plantar surface of the foot, but in such cases, the sign is less marked.

In summary, the reflex movement that follows pricking of the plantar surface of the foot from an organic lesion of the central nervous system can vary not only in its intensity, but also its character".

Later, in the same year, Babinski noted that stroking or tickling the sole of the foot elicited the same response. In later publications, he emphasized that the sign correlated with pyramidal tract disease and could be seen with cortical, subcortical, or spinal cord lesions. In 1903, Babinski further expanded his description to not only the extensor toe sign but also the fanning or abduction of the toes. This sign became so popular that a cartoonist drew a portrait of Babinski for the popular tabloid Chanteclair, where both elements of his observation were captured with the combined imagery of the toes and a fan. The extensor response of the toes was described as the "phenomena des orteils" and the fanning of the toes was described as the "signe de l'éventail".

Though the toe extensor response was noted by many earlier, including Wernicke in a patient with hemiplegia, Stumpell in a case of amyotrophic lateral sclerosis, Remak in a case of transverse myelitis, this response was attributed to a vague spinal reflex. It was Babinski who attributed the extensor toe response to the pyramidal tract lesions and he is justifiably credited for the same. Collier in 1899 made the first English publication on this topic and he used the English term extensor response. Babinski was more acclaimed internationally than in France itself and was made honorary member of American Neurological Association and elected to the Royal Medical Society of London and was even nominated for the Nobel Prize.

References

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