

## Clinical Sign Revisited

### Hoffman's Sign

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#### Introduction

The clinical neurological examination plays a key role in the evaluation of the patient in the era preceding high technology medicine. In the contemporary medical practice, laboratory tests and imaging are given greater weight in diagnostic decision making. Therefore, the clinical neurological examination has lost ground as the primary tool in clinical localization. The complexity of reflexes and other clinical neurological examination can be understood through an appreciation of the historical aspect and greater reliance on bedside clinical skills.

#### Historical aspects

The description of pathological plantar reflex by Joseph Babinski (1857-1932) in 1896 incited a variable deluge of new reflex. The lower extremity was the most exploited anatomic region for the majority of reflex hunters. Abnormal reflex response in upper extremities are less constant, more difficult to elicit and usually less diagnostically significant. **The Hoffman** and **Tromner** signs are most commonly clinically used corticospinal tract signs of upper extremities.

The Hoffman sign has been described in clinical practice for approximately hundred years as a reliable upper motor neuron reflex response in the upper extremities. The sign is attributed to Johann Hoffman (1857-1919), a German neurologist. It was felt to be a test of disease of corticospinal tract, also known as digital reflex, snapping reflex, jackobson reflex. One may look in vain for publication by Hoffman in which he describes "his" reflex. Careful search of the literature fail to reveal any direct reference by Hoffman to the sign that bears his name. Keyser in 1916 reported a series of 35 cases showing the Hoffman's reflex, but could find no reference to Hoffman's contribution at that time [1]. It was **Hans Curschmann** (1875-1942),

Hoffman's resident who cited the reflex in a footnote about neurological abnormality in a 10 year old boy with acute nephritis. "Bicep and tricep reflexes were diminished bilaterally and Hoffman's phenomenon (finger flexion reflex) was negative bilaterally". In this footnote Curschmann further elaborated: "The phenomenon of J Hoffman (not published) entails that the examiner holds the slightly bent finger of the patient between thumb and index finger and then "snaps" the nail of one of these finger. A quick flexion of this, or more commonly all of these fingers, will occur"[2].

In 1936, Kastein stated that the Hoffman (and Tromner) reflex is a normal stretch reflex of the finger flexor muscle. Wartenberg emphasized that both reflexes are based on physiological mechanism of the muscle stretch reflex. The finger flexors contract when they are being stretched rapidly. Hence these reflexes can be elicited in normal subjects. They may, however, be indicative of a pyramidal tract lesion, especially in cases with asymmetric findings and in the presence of other pathological reflexes.

#### Method

To elicit Hoffman sign the patient's relaxed hand is held with the wrist dorsiflexed and finger partially flexed. With one hand, the examiner holds the partially extended middle finger between her index and middle finger. With a sharp, forcible flick of the other thumb, the examiner nips or snaps the nail of the patient's middle finger, forcing the distal finger into sharp, sudden flexion followed by sudden release. The rebound of the distal phalanx stretches the finger flexors. If the Hoffman sign is present, this is followed by flexion and adduction of the thumb and flexion of the index finger, and sometimes flexion of other fingers as well [3].

In the Tromner sign, the examiner holds the patient's partially extended middle finger, letting

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the hand dangle, then, with the other hand, thumps or flicks the finger pad. The response is same as that in the Hoffman test. Both methods are equivalent and either manner of testing may be used; both are sometimes referred to as Hoffman test.

### Discussion

In so far as the Hoffman sign tends to track the presence of hyperreflexia, the Hoffman sign may be evident in patients with hyperthyroidism, anxiety state and other conditions associated with increased deep tendon reflexes. Typically a systemic cause of hyperreflexia such as hyperthyroidism would be expected to cause bilateral findings, whereas structural damage in the brain, for example a tumour, would be expected to cause unilateral finding. Thus, it might be expected that a unilateral Hoffman sign would be more specific for structural disease [4].

Hoffman sign is also commonly used in clinical practice to assess cervical spine disease. Compared with the Babinski sign, the Hoffman sign is more prevalent in patients surgically treated for cervical myelopathy and is more likely to be found in patients with less severe neurological deficits. In patients with lumbar spine disease but without symptoms related to cervical spine, a bilateral Hoffman sign was a highly sensitive marker for occult cervical cord compression [5].

### Conclusion

The Babinski of the arm, that is, the upper

extremity analogue of the plantar extensor response was not discovered by Hoffman or Tromner. Singly or jointly, the reflexes of Hoffman and Tromner have evolved to form an integral part of the current, standard neurological examination. When present bilaterally, Hoffman sign is usually an indication of hyperactive deep tendon reflexes. Although disease of the pyramidal pathway may be responsible, healthy individuals with hyperactive reflexes may have Hoffman sign such as in cases of anxiety, hyperthyroidism and stimulatory drugs. When asymmetric or unilaterally present, especially in combination with other pathological reflexes or abnormal findings, Hoffman sign usually signifies disease of the nervous system.

### References

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