Sleep palsy (Saturday-night palsy) of the deep radial nerve

Case report

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A patient with a long-recognized asymptomatic lipoma adjacent to the deep radial nerve developed paralysis of this nerve from a compression similar to the sleep palsy, or “Saturday-night palsy,” mechanism.

KEY WORDS • radial nerve • compression neuropathy • Saturday-night palsy

Sleep palsy, or “Saturday-night palsy,” consists of a loss in function of one or more nerves because of stretching or compression due to an external force acting through the skin. It usually affects patients remaining for extended periods of time in one position during deep sleep caused by fatigue, alcohol intoxication, or drug narcosis. This type of palsy of the radial nerve is described to result from stretching or compression of the nerve in three places: the axillary outlet, the brachioaxillary angle, and the site where the nerve turns around the lateral margin of the humerus immediately below the deltoid muscle insertion. A case is reported of Saturday-night palsy of the radial nerve at the level of its division in the forearm where it was also compressed by a lipoma.

Case Report

This 65-year-old man was admitted to the Neurosurgical Institute of the Catholic University in February, 1983. Eighteen months before admission, the patient noted on waking a complete inability to extend the right fingers and hand. The patient had not been excessively fatigued or under drug or alcohol intoxication. The clinical picture was interpreted as a paralysis due to a cerebrovascular accident. The functional deficits remained stable.

Examination. Loss of extension of all the fingers and a wrist-drop on the right was found; sensation was normal. A painless swelling of 5 years’ duration at the proximal portion of the radial aspect of the right forearm was noted. At this level the diameter of the right forearm was 2 cm larger than the left. An elastic, oval mass was palpable, and atrophy of the extensor muscles was evident. Electromyography showed total denervation of the deep radial nerve muscles, including the extensor muscles of the wrist.

Operation. The tumor was approached through an anterior incision of the forearm at the level of the elbow. It appeared grossly to be a lipoma. The superficial branch of the radial nerve was seen to be stretched by the ventroradial aspect of the tumor, but the deep branch was not visible (Fig. 1). The tumor was 6 cm in diameter; after passing under the fibrous arcade of Frohse, it had grown between the heads of the supinator muscle. The arcade of Frohse was sectioned and the fibers of the superficial head of the supinator muscle were divided; the tumor was totally removed using microsurgical techniques. After tumor removal the deep radial nerve, which had been compressed and stretched by the dorsal aspect of the tumor, was finally visible (Fig. 1). Histological examination confirmed the tumor to be a lipoma. After 12 months a complete functional recovery of the extensor muscles of the right hand and fingers was seen.

Discussion

The radial nerve divides, usually at the level of the lateral epicondyle of the humerus, into a deep radial or posterior interosseous (motor branch) nerve and a superficial radial (sensory branch) nerve. The deep radial nerve descends, passing over the anterior aspect of the radiohumeral joint. The most proximal part of the superficial head of the supinator muscle forms a fibrous arch (the arcade of Frohse). The deep radial nerve...
Deep radial nerve palsy

FIG. 1. Schematic drawing showing the relationship of the benign tumor to the arcade of Frohse and the radial nerve division at the elbow.

passes through this arcade to enter the plane between the superficial and deep heads of the supinator muscle.3,6,7 On the dorsum of the forearm this nerve divides and gives off branches, usually to the musculi extensor digitorum communis, extensor pollicis brevis and longus, abductor pollicis longus, extensor indicis, extensor digitii minimi, and extensor carpi ulnaris.3,7 Therefore, a deep radial nerve palsy causes a diminution or loss of extension of all the fingers and atrophy of the posterior forearm muscle with the exclusion of the musculi brachioradialis and extensor carpi radialis longus. There is no wrist-drop and sensation is maintained in the dorsal radial aspect of the hand.3,7 In some cases the deep radial nerve also gives off branches to the radial extensors of the wrist before it enters the supinator muscle; in such cases a wrist-drop may be also present,4,7,8 as in our patient.

It is well known that paralysis of the deep radial nerve may be caused by space-occupying lesions such as lipomas because of the anatomical relationships of the nerve to the arcade of Frohse.1,6,8 Lipomas are usually asymptomatic for many years, as in our patient. In 1978, Mosser, et al.,4 collected 22 published cases of lipomatous compression of the deep radial nerve. Paralysis due to Saturday-night palsy was not described. The period from onset of paralysis until surgery ranged from 3 months to 12 years. Of 16 patients with follow-up monitoring, 14 achieved complete recovery between 3 months and 5 years after surgery (mean time to recovery 16 months); in the other two patients the paralysis lasted 8 and 12 years and there were no signs of recovery after a 1-year follow-up period. In our case the lipoma was asymptomatic before the onset of palsy, the duration of paralysis before surgery was 18 months, and a complete recovery was achieved 12 months after surgery. Spontaneous recovery is exceptional in cases of paralysis due to benign tumor compression,2 whereas the prognosis after operation is excellent.9

The radial nerve is the nerve most vulnerable to compression by external forces in the upper limb because of its intimate relationship to the humerus, against which it is compressed, and its poor supporting epineurial tissue at the level of the spiral groove.2 Motor nerve fibers are most vulnerable to compression. In cases of Saturday-night palsy the patient is in the deep sleep of the very fatigued, may be debilitated, and is often under the influence of alcohol. Noxious stimuli generated by lying in an abnormal position pass unperceived and the subject does not change position.7 In the present case the patient was in apparent good health, and during one night external pressure acted on the deep radial nerve which was already compressed by the lipoma. We can presume that the patient did not perceive the noxious stimuli because of the motor nature of the deep radial nerve. Usually Saturday-night palsy of the radial nerve recovers spontaneously within 6 months when not associated with other pathology.5,7

References


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