

Deafferentation Pain Following Lesion of the Common Peroneal Nerve

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ABSTRACT

Background: Deafferentation pain is a subdivision of neuropathic pain that may complicate virtually any type of injury to the somatosensory system at any point along its course.¹ Anesthesia dolorosa or deafferentation pain is felt in an area (usually in the face) which completely becomes numb to touch. The pain is described as constant, burning, aching, or severe.²

Case description: A 24-year-old male came with a complaint of severe pain in the left outer aspect of thigh and leg, which did not reduce with any medication. Ten years ago, he had undergone wound exploration for cut injury over the outer aspect of upper part of lower leg. Since then he had been having mild to moderate pain which increased in the past 1 year. His evaluation demonstrated neurofibroma of common peroneal nerve at the lacerated end. Excision of this was done to relieve the patient from pain but instead the pain increased. Examination of leg showed sensory and motor loss over the distribution of common peroneal nerve. Provisional diagnoses of, deafferentation pain of common peroneal nerve, with the differential diagnosis of complex regional pain syndrome (CRPS) type II,³ nerve entrapment, laceration of common peroneal nerve, stump neuroma were kept in mind.

Conclusion: Deafferentation pain is difficult to treat. One has to be careful while dissecting the nerve during surgery, which may lead to deafferentation pain.

Keywords: Anesthesia dolorosa, Complex regional pain syndrome type II, Deafferentation pain, Numeric rating scale.

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INTRODUCTION

Anesthesia dolorosa or deafferentation pain is felt in an area (usually in the face) which completely becomes numb to touch. The pain is described as constant, burning, aching, or severe and independent of posture or movement, though local pressure can increase the pain considerably.²

Chronic damage or formation of scar tissue seems to provoke pain mechanisms without the involvement of peripheral nociception. Also, the formation of a neuroma leads to increased sensitivity and spontaneous pain. Deafferentation pain is possible in peripheral nerve injuries. It should be considered a differential diagnosis in entrapment neuropathy and nerve injuries. It remains poorly understood, but progress in the development of multidimensional neuroimaging techniques is casting some light on these issues.⁴

CASE DESCRIPTION

A 24-year-old male came with a complaint of severe pain in the left outer aspect of thigh and leg, electric shock-like pain, neuropathic in character (pain detect score 15), disturbs his sleep and is not reducing with any medication. Ten years ago, the patient had cut injury over upper lateral aspect of the left lower leg below the knee joint, with a sharp object. He was operated for the same. Since then patient is having pain, which initially was moderate in intensity [numeric rating scale (NRS 5)] and used to get reduced by medication also. Since then he lost sensation in lower leg and foot below the injured area. For the last 5 years, he had involuntary movements in left foot and twisting of foot when he walks. One year ago, pain increased in left leg and swelling was noticed over the old injury site, for which magnetic resonance imaging (MRI) of his leg was done, which showed focal hyperintense lesions in anterior leg, calf, and around the adjacent proximal fibula; and when fine needle aspiration cytology was done on the swelling, it was suggestive of

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neurofibroma. To treat pain, excision of neurofibroma was done. Histopathology report confirmed neurofibroma. However, pain did not subside instead it got increased (NRS 10) 2 months following surgery, which is not responding to any medicine and is annoying, now disturbing sleep also.

On examination, it was found that his both superficial and deep pain sensations were absent on left common peroneal nerve distribution area. Plantar reflex is also absent on the left side. Involuntary oscillatory movements were observed in the left foot, and the dorsiflexors of the left foot had grade I muscle power only.

The ultrasonography after neurofibroma excision showed subcutaneous echogenic area inferior to the head of left fibula laterally with central hypoechoic foci 2.2 × 1.1 cm. Central hypoechoic area measures 5.2 mm in thickness.

The MRI was done after excision, showing mild thickening and splaying of nerve fiber in the lateral segment of common

peroneal nerve, muscle atrophy of peroneus longus and brevis, and lateral head of gastrocnemius, with no recurrent mass over nerve, and distal portion of the common peroneal nerve could not be visualized.

DISCUSSION

Dolorosa or anesthesia dolorosa or deafferentation pain is felt in an area (usually in the face) which completely becomes numb to touch. The pain is described as constant, burning, aching, or severe and is independent of posture or movement, though local pressure can increase the pain considerably.²

Treatment of anesthesia dolorosa or deafferentation pain is very difficult. Various modalities can be tried such as medicines, dry needling, and nerve stimulator, as other modalities such as alcohol injection in neuroma,⁵ radiofrequency ablation,⁶ and removal of neuroma may not be helpful.

In this patient, the common peroneal nerve might have got lacerated at the time of cut injury or during wound exploration, which is responsible for sensation loss and weakness. The MRI of leg does not locate the distal common peroneal nerve which could have been because of the distal degeneration of nerve. Neurofibroma present at the proximal cut end of the nerve may or may not be responsible for increase in pain because after its removal pain did not decrease, instead it increased.

Deafferentation pain is possible in peripheral nerve injuries. It should be considered a differential diagnosis of entrapment neuropathy, complex regional pain syndrome (CRPS) I and II, neuromas of nerve stump, and nerve injuries.

Possible mechanisms of deafferentation pain are as follows.

The touch-carrying nerve fibers are injured by surgery, while little or no damage occurs to pain-carrying fibers. Surgical injury may also prevent nerve fibers from overlapping as they normally should, resulting in distorted signals being sent to the brain. Onset of pain is immediate or delayed for months.⁷

Anesthesia dolorosa pain is much like phantom limb pain but is occurring to an amputated trigeminal nerve branch instead of an arm or leg. After surgery, when these pain signals suddenly stop,

the brain may deal with this loss of input by remembering and replaying the old pain signals.

Chronic damage or formation of scar tissue seems to provoke pain mechanisms without the involvement of peripheral nociception. Also, the formation of a neuroma leads to increased sensitivity and spontaneous pain.⁸

Deafferentation pain likely results from reorganization of the nervous system after nerve injury via processes that interact with the substrates for pain perception (the pain matrix). A better understanding of the plastic mechanisms influencing such cross talk among these systems will help develop therapeutic interventions using peripheral stimulation and neurofeedback.

Deafferentation pain following nerve injury annoys patients, and its management is a challenge in clinical practice. Although the mechanisms underlying deafferentation pain remain poorly understood, progress in the development of multidimensional neuroimaging techniques is casting some light on these issues.

CONCLUSION

One has to be careful while dissecting the nerve and neuromas during surgery as it may lead to deafferentation pain which is very difficult to control.

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