BILATERAL BRACHIAL PLEXUS COMPRESSION NEUROPATHY SECONDARY TO USE OF AXILLARY CRUTCHES - A CASE REPORT

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ABSTRACT

Bilateral brachial plexus compressive neuropathy associated with use of axillary crutches as a cause is a rare aetiology.¹ Many patients with permanent physical disabilities have required the use of assistive devices for mobility such as crutches. Improper use of crutches can lead to increased untoward forces on the axillary region, which may lead to crutch palsy. The purpose of this article is to present one case of bilateral wrist drop secondary to the usage of crutches for 3 months. The patient was using locally made wooden crutches. The use of crutches was discontinued and patient started on neuromodulators and corticosteroids. Rehabilitation programmes with usage of dynamic splints was started. The patient attained full sensorimotor recovery after 8 months. Padded designed crutches, correct size, their proper usage, patient education or usage of other assistive devices like elbow crutches can prevent such condition. Guidelines for proper usage of crutches have also been included in this article.

KEYWORDS

Bilateral Brachial Plexus Compression Neuropathy; Axillary Crutches; Compression Neuropathy.

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INTRODUCTION

Bilateral brachial plexus compressive neuropathy associated with use of axillary crutches as a cause of diparesis is a rare and commonly misdiagnosed aetiology. Patients with physical disabilities either neurogenic (quadriparesis, quadriplegia, Diparesis, Diplegia), Anatomic (absence of amputation of extremity, non-working limb, dislocations etc.), Myogenic (Poliomyelitis etc.) require the usage of assistive devices, one of them being the axillary crutches. In a developing economy use of locally made crutches, improper usage of crutches combined with other factors like Peripheral Vascular Disease, Diabetes Mellitus, etc. predisposes a patient to development of crutch palsy. This article deals with one case report of bilateral brachial plexus compressive neuropathy, its workup and guidelines for proper crutch usage has been included in this article.

CASE REPORT

A 50-year-old male patient who underwent unilateral below knee amputation following Buerger disease presented with bilateral upper limb weakness following crutch usage for 3 months. The patient had decreased sensation pinprick loss of upto 80 percent involving the radial nerve distribution bilaterally associated with weakness in extensors of wrist and fingers bilaterally. The patient was using indigenous made wooden crutches, which lacked the axillary pad and the hand rest and rested onto both the axilla for support. Moreover, due to ischaemic pain patient was not able to sleep adequately and spent a significant time standing over the crutches. The patient was clinically diagnosed as bilateral brachial plexus compressive neuropathy and confirmed with neuro-electrophysiological studies.

Somatosensory evoked potentials revealed increase in latency and a decrease of amplitude of summated response.² Electromyogram revealed polyphasic low amplitude motor unit action potentials of slow duration consistent with partial nerve root lesion.²

The axillary crutches were discontinued upon diagnosis and managed with oral methylcobalamin and methylprednisolone. He was started on rehabilitation therapy immediately, which included use of dynamic cock-up splint active and passive range of motion exercises and usage of wheelchair for ambulation. The patient showed signs of recovery after 3 months of initiation of treatment and full sensorimotor recovery was attained only after 8 months of treatment.

Pictures Showing Snugly Fitted Indigenous Wooden Crutches of Inappropriate Length without Axillary Pad and Handrest.

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DISCUSSION AND CONCLUSION

Brachial plexus neuropathy following axillary crutch use most commonly involves posterior cord with some involvement of other cords also and usually gets resolved in 8 to 12 weeks with discontinuation of crutches, oral steroids and methylcobalamin and rehabilitative therapy. Resolution time as long as 9 months has also been reported in some case reports. Diagnosis can be done clinically by detailed history and neurological examination. It is most imperative to guide regarding use of crutches conforming to standard specifications as well as direction for proper crutch use as lack of any of the above may result in excess force over the axilla resulting in nerve injuries.

Proper Usage of Crutches

The crutches should be conforming to standard specifications. Appropriately sized crutches should be used, which allow insinuation of 2-3 fingers between underarm and the top of the crutches. Length of the crutch should extend from 2 inches below the anterior axillary fold till 6 inches in front and lateral to the tip of the toes.³

While standing up straight, the palm of the hand should rest on top of the handgrip and elbows should be bent at approximately 20 degrees.

One should stand straight with elbows bent, supporting their weight on the handgrips. Weight should not be transmitted through armpits onto the pads, instead transmitted through the hand. Also there is tendency of a person to stand using the support of the metallic post rather than the axillary pad, which increases the risk of crutch palsy nevertheless.

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