

SCIATIC NERVE INJURY FOLLOWING INTRAMUSCULAR GLUTEAL INJECTION IN CHILDREN : AN ELECTROPHYSIOLOGICAL STUDY

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ABSTRACT : Sciatic nerve injury is a common complication following intramuscular injection and the sciatic nerve is the most frequently affected nerve, especially in children. The neurological presentation may range from minor transient pain to severe sensory disturbance and motor loss with poor recovery. The aim of the study is to investigate the electrophysiological findings of sciatic nerve injury following intramuscular injection in children and to detect the prognosis of this injury. Twenty-five child patient with sciatic nerve injury caused by intramuscular injection are included in this study. They are diagnosed through short history; clinical examination and electrophysiological study in the Nineveh Handicap Rehabilitation center and private clinic. Nerve conduction study for sciatic nerves (common peroneal and posterior tibial nerves-motor) and sural nerves (sensory) bilaterally are done for the patients to study the Distal motor and sensory latency (DML; DSL); Compound motor and sensory action potential (CMAP; SNAP); and Conduction nerve velocities (NCV); by using Neuropack EMG/EP measuring system-Nihoncodene (MEB-9400K) and EMG_NT Electromyography & Nerve Conduction Studies for Galileo NT Line (Nemus-2). The common peroneal nerve is most frequently affected than the tibial nerve. Sensory sural nerve injury is detected in our study in 3 patients. Child patients with BM(25–29.9kg/m²) show less sciatic nerve injury than who have BMI(18.5–24.9 kg/m²).

Key words : Sciatic nerve, common peroneal nerve, posterior tibial nerve, electrophysiology.

INTRODUCTION

The sciatic nerve is formed from the anterior and posterior divisions of the L4, L5, S1 and S2 and the anterior division of the S3 spinal nerve. The anterior divisions form the posterior tibial nerve, while the posterior divisions form the common peroneal nerve (Kim *et al*, 2004). Sciatic nerve injury following intragluteal injection is the second most common cause of sciatic nerve injury after hip arthroplasty (Kline *et al*, 1998; Plewnia *et al*, 1999; Tak *et al*, 2008). The incidence of Sciatic nerve injury complication seems to be higher in the developing world largely due to intramuscular injections being administered by inadequately trained or unqualified staff and inadequate healthcare facilities (Fatunde *et al*, 2001; Maqbool *et al*, 2009; Mansoor *et al*, 2005). The vulnerability of the sciatic nerve to damage is attributed to its long anatomic course (Plewnia *et al*, 1999; Simonsen *et al*, 1999). The common peroneal division of the sciatic nerve is more frequently injured than the posterior tibial division because of its posterolateral position, reduced protective connective tissues and the relative tethering of the nerve course (Villarejo *et al*, 1993; Kline *et al*, 1998; Eker *et al*, 2010; Pham *et al*,

2011). Sciatic nerve injury may lead to different clinical entities from mild paresthesia to serious neurologic sequel, the mechanism of injury is unknown, but allergic reactions, direct nerve fiber damage, neuronal ischemia and constriction of scar tissue are postulated (Yeremeyeva *et al*, 2009; Bramhall *et al*, 2011; Bađić *et al*, 2012). Injury to sciatic nerve lead to complicated condition like foot drop. Foot drop can be defined as a significant weakness of ankle and to dorsiflexion; the foot and ankle or siflexors include the tibialis anterior, extensor hallucis longus, an extensor digitorum longus, these muscles help the body clear the foot during swing phase and control plantar flexion of the foot on heel strike. Weakness in this group of muscles results in an equinovarus deformity this is sometimes referred to as step pagega it (Buhroo *et al*, 2007). The pathology of injection injuries varies depending on the injection site and the agent injected; Extra fascicular injection produces no or minimal nerve injury. In contrast, intrafascicular injection results in nerve damage ranging from minimal to severe. Toxic effects can be seen in both the axon and the Schwann cell with its myelin sheath; splitting and fragmentation of myelin and axon; Early signs of axonal regeneration with