

Traumatic Sciatic Nerve Injury Following Intramuscular Injection: A Case Report

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ABSTRACT

Traumatic sciatic nerve injury secondary to intramuscular (IM) injection is a common yet avoidable cause of nerve injury. Here we describe an 8-year-old boy who developed foot-drop secondary to IM injection. We will highlight risk factors, early recognition, management and prevention of sciatic nerve injury associated with IM injection.

Keywords: Sciatic Nerve, Gluteal Region Injections, Intramuscular Injection, Traumatic Nerve Injury, Foot Drop.

INTRODUCTION

Intramuscular (IM) injection is a common method used to deliver vaccination and medication such as antipyretics and antibiotics.¹ Though this method has been practiced for several decades' complication still arise. They vary from simple, self-limiting inflammatory reaction such as erythema and swelling, to devastating neurological outcome.

In this paper, we discuss a case of an 8-year-old boy who presented with left foot drop secondary to traumatic IM injection in the gluteal region.

CASE PRESENTATION

A healthy 8-year-old boy who was referred from a local hospital as a case of left foot drop for further investigation. At the age of 4 years, the patient had a febrile illness for which he was given antipyretic medication as IM injection in the gluteal region. Immediately after the IM injection, the patient was not able to move his left leg and was not ambulating for 4 days. Gradually he started to regain back his ability to walk. However, the foot drop persisted. During that time the patient was treated with physical therapy and ankle-foot orthosis with minimal improvement.

On physical examination in our institute, at age 8, the patient was hemodynamically stable, he was conscious and alert. Upper extremities' examination was normal. As for the lower limb, left leg circumference was small than the right, with prominent atrophy in the anterior compartment of the leg. Power in the left lower extremity was as followed: ankle dorsiflexion was 0/5, ankle plantarflexion was 4+/5, eversion was 1-2/5, and inversion was 4+/5. Power at the hip and knee joint was normal. Sensory

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examination below the knee was not reliable. However, sensation above the knee was symmetrical and normal. Deep tendon reflexes of the ankle and knee were symmetrical. The gait of the patient showed high steppage gait pattern due to foot drop. The rest of the physical and neurological examination was not remarkable.

Nerve conduction study showed the following abnormalities in the left leg:

1. Absent motor response from the peroneal nerve, recoding from extensor digitorum brevis muscle.
2. Absent sensory response from the superficial peroneal nerve.

The patient was offered surgical treatment in the form of tibialis posterior tendon transfer and casting for 6 weeks, with remarkable improvement in gait following surgery.

DISCUSSION

Traumatic injury to the sciatic nerve secondary to intramuscular (IM) injection is a known complication. The safest site for IM injection is the outer upper quadrant of the gluteal region, however, the neurological injury still occurs.² Several factors were noted to increase the risk of such complication. These include variability in the sciatic nerve anatomy, age of the patient, agent being injected, and needle characteristics.

The sciatic nerve anatomy: The sciatic nerve is formed by the fusion of ventral rami of L4-S3. It gives two main branches at the level of the popliteal fossa.³ The lateral branch is also called the common peroneal nerve and the medial branch is called tibial

nerve. Of those two main branches, the lateral branch is more often injured.^{4,5} The patient age: Children are at higher risk of developing neurological squally in comparison to adults.^{6,7} Due to the fact that children have slim build and thin muscle coverage over the gluteal region.^{2,4,8}

The agents being injected: Several studies showed that the use of penicillin, chlorpromazine, diazepam, tetanus toxoid among others, had higher chances of sciatic nerve injuries.^{2,4,8}

The needle characteristic: The proximity of the needle to the nerve could carry a higher chance of injecting the agent directly into the nerve.^{8,9} The length, size, and bevel end of the needle could also play an important role.⁸

Early onset of neurological symptoms suggestive of sciatic nerve injury is associated with worse outcomes.⁹ The immediate onset of symptoms could indicate direct injection of the agent into the nerve. While delayed symptoms could indicate injection in the epineurium or surrounding tissues.⁸ Injury to the sciatic nerve can present with motor and sensory symptoms. The most common motor presentation is foot drop.⁶ While sensory symptoms include radicular pain and paresthesia.^{2,10}

Early recognition, investigation, and treatment of sciatic nerve injury might alter the prognosis.⁸ Sciatic nerve injury can be diagnosed by physical examination, MRI, EMG, and nerve conduction study.⁶ Treatment of sciatic nerve injury includes noninvasive and invasive measures. The noninvasive treatments are physical therapy and pharmacological treatment to control pain. Invasive intervention includes surgery.^{6,8} Physical therapy is recommended to be started within the first two-month post-injury as this could improve the patient motor skills and prevent joint contractures.² If there is no improvement with the use of physical therapy or medical treatment, then surgical intervention is warranted.

CONCLUSION

Traumatic injury to the sciatic nerve caused by IM injection is a preventable cause of iatrogenic nerve injury. Though IM injection is regularly practiced, minor and major complication still occur. There are multiple factors that can increase the risk of nerve injury such as the anatomy of the nerve, patient age, agent being injected, needle characteristic and onset of symptoms. Early recognition and treatment with physical therapy, pharmacological therapy, and surgery could alter the course of the disease and improve the outcome.

REFERENCES

1. Mishra P, Stringer MD. Sciatic nerve injury from intramuscular injection: a persistent and global problem. *International Journal of Clinical Practice*. 2010; 64(11):1573-1579. doi:10.1111/j.1742-1241.2009.02177.x.

2. Ramtahal J, Ramlakhan S, Singh K. Sciatic Nerve Injury Following Intramuscular Injection: A Case Report and Review of the Literature. *Journal of Neuroscience Nursing*. 2006;38(4):238-240. doi:10.1097/01376517-200608000-00006.

3. Adibatti M. Study on Variant Anatomy of Sciatic Nerve. *Journal Of Clinical And Diagnostic Research*. 2014. doi:10.7860/jcdr/2014/9116.4725.

4. Toopchizadeh V, Barzegar M, Habibzadeh A. Sciatic Nerve Injection Palsy in Children, Electrophysiologic Pattern and Outcome: A Case Series Study. *Iran J Child Neurol*. Summer 2015;9(3):69-72.

5. Curtiss PH. Sciatic Palsy in Premature Infants. *Jama*. 1960;174(12):1586. doi:10.1001/jama.1960.03030120026005.

6. Kim HJ, Park SH. Sciatic nerve injection injury. *Journal of International Medical Research*. 2014; 42(4): 887-897. doi:10.1177/0300060514531924.

7. K ASD, A AAN. Iatrogenic Sciatic Nerve Injuries Following Gluteal Intramuscular Injection Among Children. *International Research Journal Of Pharmacy*. 2014; 5(4): 267-270. doi:10.7897/2230-8407.050457.

8. Shukla D, Kakati A, Bhat D, Devi B. Injection nerve palsy. *Journal of Neurosciences in Rural Practice*. 2013; 4(1): 13. doi:10.4103/0976-3147.105603.

9. Pandian JD, Bose S, Daniel V, Singh Y, Abraham AP. Nerve injuries following intramuscular injections: a clinical and neurophysiological study from Northwest India. *Journal of the Peripheral Nervous System*. 2006; 11(2): 165-171. doi:10.1111/j.1085-9489.2006.00082.x.

10. Yeremeyeva E, Kline DG, Kim DH. Iatrogenic Sciatic Nerve Injuries At Buttock And Thigh Levels. *Neurosurgery*. 2009; 65(suppl_4). doi:10.1227/01.neu.0000346265.17661.1e.

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