

Sciatic nerve injection injury in children: Management and outcome

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Summary:

Background: Sciatic nerve injury is a common complication following IM gluteal injection in children. A controversy still exists regarding management and outcome.

Objective: To find the outcome of conservative and surgical treatment and compare it with other studies.

Patients and Methods: This is a retrospective study of 24 children(less than 15 years old) with sciatic nerve injection injury at the gluteal region. The child age, gender, type of injection drug, time of injury with complete neurological examination and EMG study were recorded. Conservative treatment including physiotherapy and surgical treatment including surgical exploration and neurolysis at the buttock region were done with follow-up 6 months to one year.

Results: Patient's age ranged from 6 months to 15 years; there were 18 male and 6 female. The most common IM drugs are analgesic in 40% and antibiotic in 18%. Neurological complaint was 22 foot drop (33.3%) and pain in 2 patient (8.7%). Surgery was done in 16 cases (66.6%) and 8 patients (33.3%) were treated conservatively . Outcome of surgery was good in (62.5%) and poor in (37.5).

Conclusions: we recommend surgery 2-3 months after conservative treatment including physiotherapy, analgesia, and EMG follow up, if no neurological recovery occurred. The outcome of surgery was good in the child with sciatic nerve injection injury

Key Words: sciatic nerve, Intramuscular injection, injury, gluteal region.

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Introduction:

Sciatic nerve injury due to intramuscular (IM) gluteal injections is an iatrogenic injury that can cause significant health problems especially in developing country in children.

It may lead to difficult clinical entities from mild sensory deficit to severe neurological damage.

The mechanism of injury is still unknown, but allergic reactions, direct nerve fiber injury, nerve ischemia, fibrosis, and adhesive scar are presumed (1, 2).

Antibiotics and analgesic drugs are most common drugs, mostly related to frequent use (3).

The condition history, physical examination, and EMG assessments are important for early diagnosis and managements; the common peroneal branch is the most affected nerve (3,4).

Children are more affected than adult because of less fatty tissue and small muscular bulk (4).

Cases with early spontaneous recovery or partial mild injury can be treated conservatively, however cases where there is no clinical and electrophysiological recovery, usually undergo surgery. (4)

Surgical option treatment consist of external neurolysis , interfasciculous neurolysis, nerve graft and nerve transfer. (5.6).

Sciatic nerve injection injury is a preventable condition in children. If there are no drug substitute for intramuscular injections, the gluteus region should be avoided by using deltoid muscle or anterior lateral thigh (7).

IM injections administered outside the upper outer quadrant of buttock are major causes of Sciatic nerve injection injury.

The sciatic nerves are most prone to damage when the injections are more medial and /or inferior (6. 7).

Patients and methods:

From Jan.2012 to Oct.2014 data were collected retrospectively for 24 children with sciatic nerve injections injury at gluteal region at the private nursing home hospital /medical city and al alwyia private hospital. All patients were younger than 15 years old with gluteal injections history. The patient's age, gender, types of injected drugs and the time of injury were recorded. Neurological examinations for all patients were done including muscles power, reflex, and sensory response with EMG evaluation. The EMG examination was done soon after injury followed up by one month and two months after injury scoring the electrophysiological finding as severe, moderate and mild lesion. 8patients with mild to moderate injury were treated conservative including physiotherapy, analgesia, vitamins. 16patients had surgical explorations because of severe deficit (foot drop) without improvements with proper

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conservatively therapy and no EMG recovery 2-3 months after surgery.

Post-operative outcome were classified as good (slight limitations of physical activity) or excellent (no limitations of physical activity) or poor (severe limitations of physical activity and using walking device).

Follow up was 6 months to one year after the injury and surgical treatments.

Results:

Surgery was performed in 16 children out of the total 24 (66.66%) 2-3 months after the injections, and 8 children (33.3%) have received conservative treatments. Patient age ranged from 6months to 15years, there were 18 male and 6 female. The most common intramuscular injections drugs were analgesic 40%, antibiotic 18%, and the rest were steroid, antiemetic and vitamin K injection.

The signs and symptoms are foot drop in 22 children (91.6%) and pain in 2 patients only (8.3%).

The onset of symptoms was immediate in all patients and the duration of symptoms from onset to consultation were 6 hours to 30 days.

The electromyography studies show the peroneal part of the sciatic nerve was affected in 20 patients (83.25%) than the tibial part in 4 patients only (16.25%).

The neuronal defect was severe in 12 patients, moderate in 6 and mild in 6 children.

Outcome was excellent too good in 16 patients (66.6%) after long time follow up and was poor in 8 patients only (33.3%).

The outcome was good in surgical group in 10 patients out of 16 (62.5%) and poor in 6 patients (37.5%).

The outcome was good in 6 patients (75%) in conservative group out of 8 patients and poor in 2 patients (25%).

Discussion:

Sciatic nerve injections injury is not a very rare condition even in developed countries In a study recording the mechanism, location, surgical treatment and outcome of sciatic nerve injection injury, injections were reported to be the reason in 64 patients out of 175 with buttock level and out of 303 of all levels sciatic nerve injury(Kim et al of 2004)(8). In Pakistan between 2001 to 2003 the annual meeting of injections injury (more than 90% injury of the sciatic nerve) was 7.1 per million children under 3year. (9) Kline et al(2) recorded the injection was the most common injury mechanism affecting the sciatic nerve at the buttock level , more than 50% in 24 years study (2, 10). Male is affected more than female in present study which agrees with Mishra because of thin fatty pad (7, 9). Villargia and Pascal (11) reported 370 cases of sciatic nerve injections injury in children less than 10 years of age which also go

with this study where 90% were less than 10 years and 10% more than 10 years. Studies have shown that the common peroneal nerve is more affected because of its posterolateral position and small amount of supportive tissue Sunderlands which is compatible with the present study. (12)

Analgesic and antibiotic have been reported as the most common causative drugs because of their frequent use as shown in study by Sevim et al. (13) In this study some patient parents did not know the injected drug but the analgesic and antibiotic is the most common causative agents. The outcome of treatment depended on severity of injury clinically and by EMG study. (14, 15) In our group severe injury did not recover even after one year follow up, and only mild to moderate lesion had good prognosis. Surgical exploration and neurolysis were recommended in our study in patient 2-3 months without recovery. The outcome of surgery was good in (62.5%) and poor in (37.5%), while in conservative group (8 patients) the outcome was good in 75% and poor in 25%.

Out of 190 patients presented sciatic nerve injection injury with retrospective study, 15 were treated conservative and the other 175 had surgical intervention. Tatude D.J. and Familusi J.B. (14, 16, 17) Neurolysis were reported in 160 cases treated conservatively without surgery, epineurial neurolysis in 12 cases, nerve graft in 2 cases and nerve exploration only one case (16, 18). Follow up of 151 patients for average 8.5 years revealed excellent to good recovery in 57% and 78% at early and late stage respectively (17, 19, and 20).

Conclusions:

Early diagnosis and management including conservative treatment in sciatic nerve injection injury in children can minimize long term sequels; maximize the recovery and improvement of neurological deficit. We recommend surgical exploration and neurolysis for severe defect (foot drop) without clinical and electrophysiological recovery 2-3 months after injury.

Recommendations:

Sciatic nerve injection injury is preventable condition if IM injection is done using outer upper part (quadrant) of gluteal and buttock area. . IM injections can be replaced by I.V line or trans-rectal in children. The alternative location for IM injection in gluteal region are the deltoid muscle and anteriolateral thigh in children.

Author contributions:

Dr.Tarik AbdulWahid: Study conception, Critical revision, Acquisitions of data analysis.

Dr.Ali Tarik AbdulWahid. .Study design, Interpretation of data , Drafting of manuscript.

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