Intramuscular injection: an uncommon cause of ipsilateral foot drop

Introduction

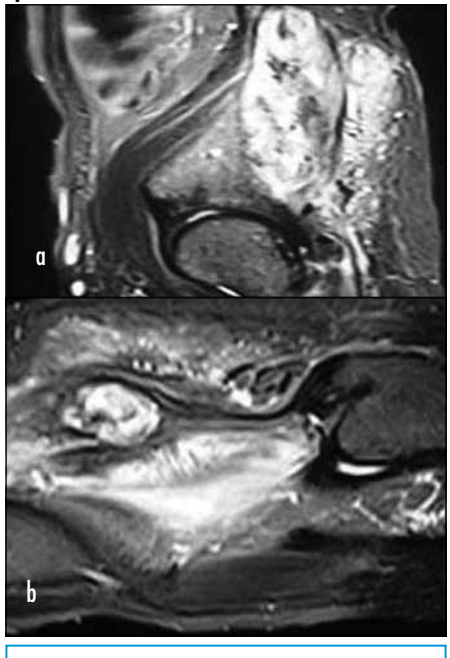
Sciatic nerve injury after intramuscular injection is rare and avoidable but remains a global problem affecting both wealthy and poorer countries (Mishra and Stringer, 2010). This article reports a man with left-sided gluteus medius muscle haematoma following intramuscular injection that compressed the left sciatic nerve root leading to left-sided persistent foot drop.

Discussion

Unilateral foot drop leading to steppage may occur as a result of sciatic neuropathy, peroneal neuropathy or in lumbosacral radiculopathy. Rarer causes of unilateral foot drop include pseudoaneurysm, neoplastic growth, and toxic neuropathies like chronic arsenic, lead or organophosphorous toxicity. Ge et al (2010) reported a case of superior gluteal artery aneurysm following bone marrow biopsy presenting as pelvic mass and leading to sciatica with foot drop. Kahraman et al (2010) reported a case of primary diffuse large B cell lymphoma of the sciatic nerve resulting in ipsilateral foot drop. Foot drop very rarely may be caused by vasculitic muscle infarction of diabetes mellitus (Karalliedde et al, 2010). There is one report of peroneal intraneural ganglion cyst in a child that led to progressive foot drop (Luigetti et al, 2012).

Persistent and painful foot drop caused by a gluteal haematoma compressing the sciatic nerve as a complication of intramuscular injection in the gluteal region in an adult is very rare, although sciatic nerve injury following intragluteal injection is a global problem.

Figure 1. a. Magnetic resonance imaging of the lumbosacral and (b) gluteal region showing large gluteal haematoma as hyperdense or white opacities.



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Case Report

A 54-year-old man had an intramuscular injection in the left gluteal region for severe leg pain following a fall. He presented to the accident and emergency department 12 hours after the injection with severe chest pain and was diagnosed as having had an acute myocardial infarction. He had a history of hypertension and poor drug compliance but no history of bleeding or clotting disorders. After a thrombolytic agent contraindication check list was completed, he was treated with intravenous streptokinase (1.5 million units over 60 minutes in 100 ml normal saline). Almost 10 hours after the thrombolysis he developed pain, redness and a local rise of temperature in the left gluteal region along with tingling and pain in the whole of the left leg.

The patient was referred to the authors' hospital 5 days after the incident with left lower limb pain and difficulty in walking. On examination his left gluteal region was swollen and tender with an ecchymotic patch and raised local temperature. His left ankle dorsiflexors and everter muscles had Medical Research Council (MRC) grade 1 power, his left ankle plantiflexors and knee flexors had MRC grade 2 power, and his left hamstring muscles had grade 3 power. His straight leg raising was negative bilaterally. He had diminished sensation in the left leg and foot along the distribution of the peroneal nerve. His gait was high stepping variety (see video at www.bjhm.co.uk). Routine haematological and biochemical parameters, including electrolytes and thyroid profiles, were normal. Computed tomography scan of the brain, and magnetic resonance imaging of the thoracic and lumbosacral spine were non-contributory. Magnetic resonance imaging of the lumbosacral plexus and gluteal area showed irregular haematoma in the left gluteus medius muscle compressing the left sciatic nerve (*Figures 1a* and *b*). Significant associated inflammation and oedema of all left-sided gluteal muscles and intermuscular fat planes were noted. Nerve conduction velocity study revealed left tibial and left peroneal nerve neuropathy. He was diagnosed as having compressive sciatic neuropathy predominantly involving the peroneal compartment muscles as a result of intragluteal haematoma following intramuscular injection in the gluteal region.

His pain and haematoma resolved with conservative management but foot drop persisted 4 weeks after the incident, despite physiotherapy including galvanic stimulation and foot drop splint. The anterolateral compartment muscles of the left leg were found to be wasted on follow up. An electromyogram showed that left peroneal motor and small sensory components were inexcitable and left tibial muscle action potential had diminished amplitude. A concentric needle electromyogram showed denervation of the left tibialis anterior muscle but partial re-innervation of the left biceps femoris (*Figure 2*).

The sciatic nerve was explored below the left gluteus maximus in between the greater trochanter and the ischial tuberosity. External neurolysis was performed by removing the fibrous tissue around the sciatic nerve (*Figure 3*). A electromyogram and nerve conduction velocity studies after 2 months were planned to monitor the recovery – the repeat electromyogram showed no change from the previous one.

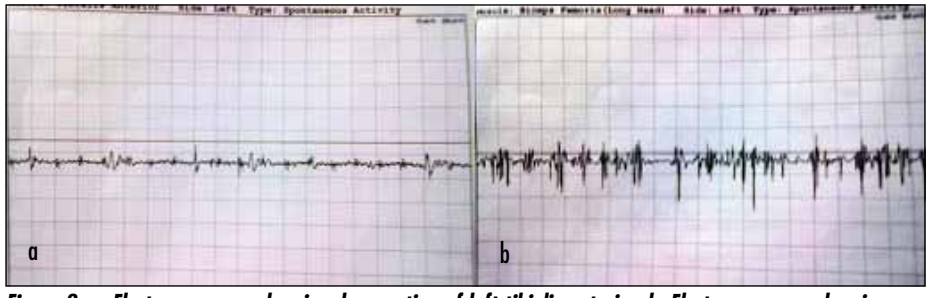

Figure 2. a. Electromyogram showing denervation of left tibialis anterior. b. Electromyogram showing partial re-innervation of left biceps femoris.

Only a handful of complications of intramuscular injection warrant emergency treatment. Kühle and Swoboda (1999) reported a rare case of gluteal compartment syndrome precipitated by intramuscular injection. The patient presented with features of nerve compression and sciatic pain necessitating immediate surgical intervention. Prompt identification of the features of nerve compression is necessary as only immediate surgical intervention can salvage the nerves and muscle tissues. **BJHM**

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LEARNING POINTS

- A recent history of intramuscular injection should be enquired about before thrombolysis is given.
- Inadvertent use of intragluteal injection and thrombolysis simultaneously can lead to severe intragluteal haematoma.
- Prompt identification of neural damage following a haematoma is very important as delay in treatment can lead to severe sciatic and peroneal nerve damage resulting in persistent and painful foot drop.
- Intragluteal haematoma is one of the rarer causes of painful foot drop.

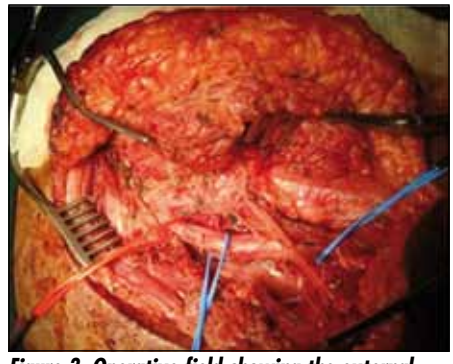

Figure 3. Operative field showing the external neurolysis.

C (2010) Iatrogenic pseudoaneurysm of the superior gluteal artery presenting as pelvic mass with foot drop and sciatica: case report and review of literature. *Vasc Endovascular Surg* **44**: 64–8

Kahraman S, Sabuncuoglu H, Gunhan O, Gurses MA, Sirin S (2010) A rare reason of foot drop caused by primary diffuse large b-cell lymphoma of the sciatic nerve: case report. *Acta Neurochir (Wien)* **152**: 125–8

Karalliedde J, Vijayanathan S, Thomas S (2010) Painful foot drop; a presentation of diabetic muscle infarction. *Diabet Med* **27**: 958–9

Kühle JW, Swoboda B (1999) Gluteal compartment syndrome after intramuscular gluteal injection. *Z Orthop Ihre Grenzgeb* **137**: 366–7

Luigetti M, Sabatelli M, Montano N, Cianfoni A, Fernandez E, Lo Monaco M (2012) Teaching neuroimages: Peroneal intraneural ganglion cyst: a rare cause of drop foot in a child. *Neurology* **78**: e46–e47

Mishra P, Stringer MD (2010) Sciatic nerve injury from intramuscular injection: a persistent and global problem. *Int J Clin Pract* **64**: 1573–9

Deodorant: friend, foe or folly

A 22-year-old woman with a history of personality disorder was referred to the plastic surgery unit with a 5-day-old self-inflicted 5cm^2 area of full-thickness burn to the volar aspect of her right non-dominant wrist (*Figure 1*). She had held a full deodorant canister, with the nozzle approximately 1 cm from her wrist, and sprayed the entire contents onto her skin.

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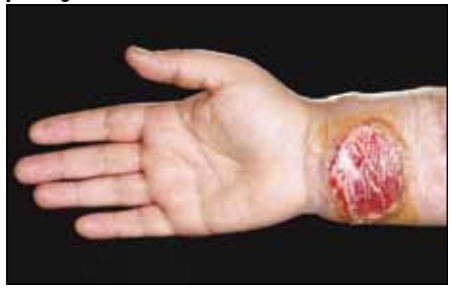
Figure 1. Full thickness burn to the volar aspect of the patient's wrist having been subjected to prolonged contact with aerosol deodorant.



Treatment involved tangential excision and split thickness skin graft resurfacing. At 2 months she had made an overall good recovery with acceptable scarring and uncompromised hand function.

Cryogenic burns are rare (Camp et al, 2003). Interestingly, cryogenic burns tend to do better cosmetically with conservative treatment than do thermal burns because of the preservation of dermal collagen in the former. **BJHM**

The authors would like to thank the Department of Medical Illustrations at Lister Hospital for their invaluable help.

Camp DF, Ateaque A, Dickson WA (2003) Cryogenic burns from aerosol sprays; a report of two cases and review of the literature. *Br J Plast Surg* **56**(8): 815–17