Sciatic Nerve Palsy due to a Superior Gluteal Artery Pseudoaneurysm Post Bone Marrow Biopsy: A Case Report and Review of the Literature

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Learning Point for the Article:
Gluteal artery pseudoaneurysm post bone marrow biopsy is a rare extraspinal cause of sciatic nerve palsy and diagnosing this lesion is crucial to offer the patient the appropriate treatment and achieve a good outcome.

Abstract

Introduction: Sciatic nerve radiculopathy can present as a result of intraspinal or extraspinal causes. Intraspinal disorders can be disk hernia, spinal trauma, tumors, or infection, whereas extraspinal cause represents a disorder outside the lumbar spine. A gluteal artery (GA) false aneurysm can potentially compress the sciatic nerve and causes radiculopathy, with subsequent motor and sensory deficits. This condition can result mainly from trauma or infection, but it can also be iatrogenic.

Case Report: We report a case of an 85-year-old male with a left sciatic nerve palsy as a result of a superior GA pseudoaneurysm post bone marrow biopsy (BMP). A short review of the literature regarding this topic is presented as well. Only a small number of similar cases are reported in the literature.

Conclusion: This case report emphasizes on the high suspicion index that the clinician should have managing a patient who suffers from sciatic nerve palsy with a history of a previous procedure around the pelvis’ area, such as BMP.

Keywords: Pseudoaneurysm, bone marrow biopsy, sciatica.

Introduction

Bone marrow biopsy (BMP) is considered to be a relatively safe procedure with a reported complication rate around 0.05–0.08% [1,2] including hematoma, infection, nerve damage, and gluteal artery (GA) pseudoaneurysm. GA false aneurysm can present as a painful, pulsatile mass on the buttock, and nerve compression symptoms such as leg radiating pain and sciatic nerve palsy [3,4,5]. It is common the fact that a patient with lower limb radiculopathy following an iatrogenic incident may present much later [6]. We report a case of an 85-year-old patient, who presented to our department with a left buttock excruciating pain and the left sciatic nerve palsy, 8 weeks after BMP. The patient was referred to a tertiary center, where he was treated successfully with an ultrasound-guided thrombin injection (UGTI).

Case Report

An 85-year-old patient presented to our department reporting pain over his left buttock, radiating to his left leg with concomitant left drop foot and gait disturbances for approximately 4-week time. The patient mentioned that 2 months ago he underwent a left-sided BMP, which was required because of a suspected plasmacytoma found in the nasopharyngeal area. Immediately after the BMP, the patient felt severe pain on the left buttock radiating to his left leg, which he was given oral painkillers for. 4 weeks later, the patient developed the left drop foot and significant gait disturbances...
along with the left buttock pain. For another 4 weeks, the patient was treated with medications for lumbar radiculopathy such as gamma-aminobutyric acid agonists, oral steroids, nonsteroidal anti-inflammatory drugs, and painkillers. As there was no improvement, the patient visited our department for further evaluation and management. He had a medical history of hypertension, hyperlipidemia, chronic obstructive pulmonary disease, diabetes mellitus type II, and coronary artery disease, which he was on aspirin for. On examination, there was tenderness palpating his left buttock as well as a mild swelling in the same area. Straight leg raising test was positive at 30°, and there was hypesthesia in the distribution area of the sciatic nerve. Severe muscle weakness on the left tibialis anterior, extensor hallucislongus, and peroneal tendons (0/5) was identified as well. The patient was systemically well, afebrile, with normal infection markers and hemoglobin 12.3. Given the history of the patient, a differential diagnosis between an intraspinal or extraspinal cause of sciatic nerve palsy was considered. Thus, a magnetic resonance imaging (MRI) scan of the lumbar spine and the pelvis, using intravenous contrast, was requested. Spine MRI revealed a moderate left L3-L4 intraforaminal disc hernia, which could hardly explain the symptoms of the patient. Pelvis MRI revealed a relatively large soft tissue mass (4.5cm × 3.2cm × 3cm) next to the left piriformis muscle, compressing the left sciatic nerve (Fig. 1). This mass could be either a hematoma or a pseudoaneurysm, with normal infection markers and hemoglobin 12.3. Given the history of the patient, a differential diagnosis between an intraspinal or extraspinal cause of sciatic nerve palsy was considered. Thus, a magnetic resonance imaging (MRI) scan of the lumbar spine and the pelvis, using intravenous contrast, was requested. Spine MRI revealed a moderate left L3-L4 intraforaminal disc hernia, which could hardly explain the symptoms of the patient. Pelvis MRI revealed a relatively large soft tissue mass (4.5cm × 3.2cm × 3cm) next to the left piriformis muscle, compressing the left sciatic nerve (Fig. 1).

This mass could be either a hematoma or a pseudoaneurysm, considering the previous BMP. To distinguish those two entities, a computed tomography (CT) scan with intravenous contrast of the pelvis was performed, which revealed a left superior gluteal artery (SGA) false aneurysm (Fig. 2 and 3). The patient was referred to the department of vascular surgery of a tertiary center for further evaluation and treatment. Initially, the patient underwent a left internal iliac artery selective angiography, which did not manage to identify the specific arterial branch from where the pseudoaneurysm originated. The next day a percutaneous UGTI was performed, which succeeded to exclude the aneurysm from circulation. The success of the procedure was confirmed by a Doppler ultrasound which showed no arterial flow inside the pseudoaneurysm. At present, 3-week post-procedure, the patient reports significant relief in terms of pain, but still, no improvement of the drop foot is noticed. His follow-up regarding the sciatic nerve function will continue.

**Discussion**

Vascular abnormalities of the pelvis are of a great interest as they can be potentially life threatening due to rupture and severe hemorrhage, or they can cause distal embolization or compression of adjacent structures, such as nerves, resulting in nerve palsy. Thus, diagnosis of these conditions is crucial, to offer the patient an effective treatment. They are distinguished

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**Table 1: Literature review of similar cases**

| Author                | Year | Case Description                                                                 | Symptoms                                                                 | Time and treatment                                                                 | Outcome                                                                 |
|-----------------------|------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Stavrakakis I M et al | 2013 | Right inferior gluteal artery false aneurysm                                      | Paresthesia, right motor deficit                                          | 7 days                                                                            | Marked pain subsidence, improvement of leg strength                    |
| Phyu                  | 2015 | Left superior gluteal artery false aneurysm                                       | Sciatica, right drop foot, no palpable paresthesia                         | 16 months                                                                         | Improvement of sciatic nerve, slight sensory and motor deficit        |
| Ge                    | 2005 | Right inferior gluteal artery false aneurysm                                       | Buttocok pain, leg numbness, drop foot                                    | 6 weeks                                                                           | Immediate pain relief, 16 weeks later patient pain free               |
| Lowenthal             | 2016 | Right inferior gluteal artery false aneurysm                                       | Buttocok pain, leg numbness, drop foot                                    | 6 weeks                                                                           | Improvement of sciatic nerve, slight sensory and motor deficit        |
| Caldwell              | 2016 | Right inferior gluteal artery false aneurysm                                       | Buttocok pain, leg numbness, drop foot                                    | 6 weeks                                                                           | Improvement of sciatic nerve, slight sensory and motor deficit        |
| Sullivan and Regi      | 2016 | Right inferior gluteal artery false aneurysm                                       | Buttocok pain, leg numbness, drop foot                                    | 6 weeks                                                                           | Improvement of sciatic nerve, slight sensory and motor deficit        |
| Yap and Jeffrey       | 2016 | Right inferior gluteal artery false aneurysm                                       | Buttocok pain, leg numbness, drop foot                                    | 6 weeks                                                                           | Improvement of sciatic nerve, slight sensory and motor deficit        |

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**Figure 1:** Magnetic resonance imaging scan.

**Figure 2:** Computed tomography scan with contrast, arterial phase - transverse view.

**Figure 3:** Computed tomography scan with contrast - coronal view.
Methods to achieve that are either endovascular (coil embolization and stent application) or ultrasound-guided percutaneous injection of cast-forming agents such as thrombin [12]. The last technique was successful in our case. The patient reported immediate pain relief and there was no arterial flow demonstrated on the Doppler ultrasound post-procedure. Drop foot remains though, we are expecting no more than partial sciatic nerve recovery, considering the outcome of similar cases described in the literature.

Conclusion

Our case report tends to highlight an SGA pseudoaneurysm as a potential extraspinal cause of sciatica and sciatic nerve palsy, especially if a traumatic or iatrogenic incident is described around the buttock area. The clinician needs to be very careful, not to miss the diagnosis, as this condition can be life threatening, or it can lead to a significant disability due to permanent loss of nerve function. Thus, sciatica post-BMP, although rare, it can happen and requires thorough clinical examination and further imaging with Doppler ultrasound, MRI, or CT scan with contrast of the pelvis and selective angiography if necessary. Having the correct diagnosis, the appropriate treatment can be applied to the patient. In case endovascular coil embolization fails to treat the lesion, UGTI is a good alternative.

Clinical Message

Diagnosing an extraspinal cause of sciatic nerve palsy can be very challenging. It is very important though to find the cause of nerve compression to offer the patient the appropriate treatment. History of previous medical intervention and thorough physical examination, as well as proper imaging examinations lead to correct diagnosis.

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