

Bilateral sterile gluteal abscesses following intramuscular injection of Penicillin: CT appearance

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Citation

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Abstract

We report a case of sterile bilateral gluteal abscesses from intramuscular injection of penicillin with computed tomographic (CT) features, rarely described.

INTRODUCTION

Sterile gluteal abscesses are rare and unique complications of intramuscular injections. We are presenting a case of sterile bilateral gluteal abscesses from intramuscular injection of penicillin with computed tomographic (CT) features, rarely described.

CASE REPORT

A 61 year old male patient with no significant past medical history presented to his primary physician with three month history of progressive dyspnea on exertion, fatigue and chest pain. His physical examination was unremarkable except for bilateral inguinal lymphadenopathy and healed left third toe ulcer.

His initial laboratory results were abnormal for high white blood cell count of $33.7 \times 10^3/\mu\text{L}$ (Neutrophils 26%, Lymphocytes 18%, Monocytes 5%, Eosinophils 1%, Bands 16%, Metacytes 2%, myelocytes 7% and Blasts 2%), low hemoglobin level of 3.0 g/dL, low hematocrit of 9.2 % and low platelet count of $14 \times 10^3/\mu\text{L}$. A diagnosis of symptomatic anemia was made with peripheral smear concerning for myeloproliferative disorder. A bone marrow biopsy performed one week later confirmed the diagnosis of myelodysplastic syndrome. The initial blood work was also abnormal for reactive Rapid Plasma Reagin (RPR) with RPR titer of 1:4 and reactive microhemagglutination test for antibodies to *Treponema pallidum* (MHA-TP). His HIV serology was negative. He denied ever been treated for syphilis. As he didn't have any neurological symptoms, diagnosis of latent syphilis of unknown duration was made. It was decided to treat him by Benzathine Penicillin G 2.4 million units intramuscularly weekly for three doses with 1.2

million units in each gluteus maximus muscle each time. After few days of the third injection patient noticed some fluctuance and softness in both gluteal regions, however there was no pain or fever. He had a contrast enhanced CT scan of abdomen and pelvis for staging of his myelodysplastic syndrome few weeks later which showed fluid collections in bilateral gluteus maximus muscles (figure 1), approximately measuring 2.7 x 1.7 cm on the right side and 2.8 x 2.0 cm on the left side with faint ill defined enhancing margins. As there was no fever, pain or evidence of overlying cellulitis, a diagnosis of sterile abscesses was made. It was treated with conservative treatment with continuous application of warm moist compresses. The fluctuance subsided after few days. The patient died few months later due to complications related to myelodysplastic syndrome despite aggressive chemotherapy.

Figure 1

Figure 1: Contrast enhanced CT scan at the level of mid pelvis show fluid collections with ill defined faint enhancing margins in bilateral gluteal maximus muscles (arrows) representing sterile abscesses secondary to intramuscular injection of penici



DISCUSSION

Intramuscular (IM) injection has been used as a means of parenteral drug administration for more than a century. The incidence of developing a complication from IM injection ranges from 0.4 to 19.3 % [1,2].

The complications of IM injections include leakage or seeping of injected solution from the injection site, bleeding, inadvertent injection of intramuscular medication into arteries or veins, nerve injury, persistent pain, abscess formation, necrosis of the surrounding tissue, scar formation, muscular fibrosis with contracture of joints and very rarely development of malignancy at the injection sites [2].

It has been suggested that most of the problems stemming from the procedure are related to local trauma of the injection itself or the irritating properties of the drug. Many of the complications are also related to inadequate training in the proper injection technique [1,2].

Abscess formation was the most common complication of IM injections in one study, occurring in 31 percent of patients who developed complications [1]. Abscesses can be infectious or can be sterile. Most Infectious abscesses following IM injections are caused by the inoculation of the site with bacteria from the needle, syringe, or the

medication. The bacteria can be carried to the tissues because of poor site preparation.

Less commonly, the abscesses that are seen at IM injection sites are sterile abscesses. These are nodules of liquefied fat and muscle resulting from necrosis of the involved tissues. Their development has been blamed on a hypersensitivity to the injected medication. This reaction is manifested by local tissue necrosis and liquefaction with a surrounding area of intense inflammation [3,4].

The literature is scanty in describing the imaging features of sterile gluteal abscesses. Only two cases of sterile gluteal abscesses secondary to IM injections has been described in literature. Both patients received intramuscular injection of medication mixed with oil suspension; penicillin in an emulsifying vehicle of sesame oil in one patient [5] and vasopressin suspension with peanut oil in other patient [6]. Only one of these cases describes CT findings. This case, which was secondary to Vasopressin tannate injection in suspension with peanut oil, diagnosed two year after the injection with fat-fluid level and calcified rims on the CT scan [6]. In our case, the sterile gluteal abscesses were seen after few days of injections as masses of fluid density with faint ill defined enhancing margins in gluteal maximus muscles. These resolved with conservative treatment.

In summery, we describe CT imaging features of gluteal sterile abscesses secondary to IM injections of penicillin. Due to the unique anatomy of the gluteal region, it is difficult from physical examination to access gluteal abscesses. CT may play an important role in identifying it and may obviate unnecessary intervention.

References

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