



Secondary Gluteal Abscess as Low Back Pain after Intramuscular Injection

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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Case Study

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ABSTRACT

Intramuscular injection is a common procedure performed in healthcare settings. Improper technique of injection could expose patient to severe complications. I would like to present a case of secondary gluteal abscess as differential diagnosis of back pain resulting from administration of intramuscular injections on dorsogluteal region. The abscess triggered unresolved high grade fever and severe backache which was not relieved by any painkiller medications. The gluteal mass was red, warm and tender on palpation. Blood test showed elevated white blood cell count. Needle aspiration was done on gluteal abscess and the specimen was sent for culture and sensitivity test. Then, the patient was treated with the most sensitive antibiotic after the result of culture and sensitivity test. Hence, greater awareness on sterile practice of intramuscular injection should be instilled among healthcare workers to minimize this complication.

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1. INTRODUCTION

Abscess is a localized collection of pus in any part of the body [1]. The abscess is often septic in nature, usually caused by an infection. On the other hand, sterile abscess does occur due to irritants such as drugs [2]. In Malaysia, intramuscular injection on gluteal region is frequently administered by nurses or medical assistants. Often, the complications of intramuscular injection are correlated with unsterile practise and improper technique of injection [1,2]. Unsterile practise of intramuscular injection could introduce microorganisms into injection site to cause gluteal abscess, which is always missed out by physician when patient presented with back pain. Furthermore, correct injection technique can avoid damage to important nerves and vessels around gluteal region [3,4]. Therefore, this case report is to raise the awareness of sterile and correct intramuscular injection technique on injection site and to promote surveillance for this serious potential complication. Nevertheless, secondary gluteal abscess could be one of the differential diagnosis for patient complaining of back pain after receiving injection on gluteal region. The patient was informed that data concerning this case would be submitted for publication and consent was obtained.

2. CASE PRESENTATION

A 63-year-old woman with history of poor controlled diabetes mellitus and hypertension, presented to Emergency Department for the third time with back pain and right leg weakness, which was worsen over the past three days. The pain was localised at gluteal region and dull in nature, with pain score of 9/10. The pain was not alleviated with any painkiller medications. The back pain was associated with fever, loss of appetite, immobility and weight loss. Patient had diabetic foot ulcer for the past 2 months with no history of trauma. The patient did not adhere to hypoglycemic and anti-hypertension medications.

According to the patient, she initially experienced left leg pain due to diabetic foot ulcer and sought treatment in two private clinics three weeks ago. She was injected with diclofenac sodium intramuscularly twice at right gluteal region by different general physicians to relieve the leg pain. After that, pain eventually developed in her right gluteal and she perceived this as “back

pain”. With the “back pain”, she presented twice to Emergency Department to seek for pain relief, yet the pain persisted. On both visits, her body temperature was normal and the physical examination was unremarkable. Blood test result was normal as well. X-ray film on vertebrae and pelvis area were normal with some signs of osteoporotic vertebrae. She was discharged with painkiller tablets.

However, persistent worsening of “back pain” caused right leg weakness brought her back to Emergency Department for the third time. On physical examination, the on-call medical officer found that her right gluteal region had a 10cm x 8cm soft lump, which was fluctuant in nature, red, warm and tender on palpation. Her temperature was 39°C (febrile state) and full blood count revealed elevated white blood cell count. X-ray film on pelvis area appeared to be normal. Then, the medical officer performed fine needle aspiration on the lump under a sterile condition. The cloudy green pus was fully aspirated and sent for culture and sensitivity test. The culture report revealed the microorganism was *Staphylococcus aureus*, which sensitive to clindamycin, erythromycin and cloxacillin. The patient was diagnosed with secondary gluteal abscess due to complication of intramuscular injection. She was treated with erythromycin and metronidazole intravenously with close monitoring. Her symptoms subsided after 5 days of hospitalization.

3. DISCUSSION

Intramuscular injection has been used as a method of parenteral drug administration to patient for therapeutic effect [4]. The incidence of complications from intramuscular injection, ranging from 0.4 to 19.3% [2]. In a study conducted by Greenblatt DJ et al. [2] among patients with complications, 31% of patients had abscess formation. In Boston Collaborative Drug Surveillance Program, almost half of the hospitalised medical patients received at least one intramuscular injection with 0.4% of patients had local complications [2]. Some journals proposed that competent technique with sterile practise could prevent unnecessary complications such as abscess, hematoma, cellulitis, tissue necrosis and sciatic nerve injury with limb paralysis [3,4]. Hartgens and Kuipers reported that both local and systemic complications frequently happen as a

consequence of unsafe intramuscular injection practise of any medication; which were clearly supported by other literature reviews [5]. Driscoll et al. [6] documented that improper intramuscular injection technique can give rise to peripheral nerve palsy and localised infections. Impairment of nerve functions leads to atrophy of muscle bulk, weakness of movement and immobility that cause morbidity and psychological problems to patients. A variety of injection-site infections, ranging from soft tissue abscess to septic arthritis have also been reported by Al-Ismael et al. [7]. Hence, aseptic practise and proper techniques can reduce the complications of intramuscular injection [1,2]. Besides, high index of suspicion is recommended to check on patients with intense localised pain and tenderness after 24 to 48 hours following injection [8,9].

Despite infections due to intramuscular injection, improper injection technique could injure the vessels, tissues and nerves [10]. There is a stir of opinions regarding the preferable site of intramuscular injection to minimise the risk of complications. Numerous research papers showed that ventrogluteal region is much safer for intramuscular injection compared to dorsogluteal region [10-16]. Dorsogluteal region is defined as upper outer quadrant on imaginary line between greater trochanter and posterior superior iliac spine; whereas ventrogluteal region is described as middle "V" region with palm placed on greater trochanter and index finger pointed to anterior superior iliac spine [14]. Ventrogluteal region is well-acknowledged as a safe injection site because it has prominent landmarks and relatively free from major blood vessels or nerves with a consistent layer of subcutaneous fat [11-13]. The ventrogluteal region is covered with the greatest thickness of gluteal muscles (gluteal minimus and gluteal medius) with subcutaneous fat layer less than 3.75cm, implying that any ventrogluteal intramuscular injection shows promising result of delivery into target muscle instead of the subcutaneous fat layer [15-16]. On the other hand, the dorsogluteal region has wide variation depth of subcutaneous fat layer, ranging from 1cm to 9cm among individuals with high susceptibility to injure the major sciatic nerve and superior gluteal artery that pass through only a few centimetres distal to injection site [17-18]. Thus, the absorption rate of administered drugs will be affected or the tissue becomes irritated when drugs do not reach targeted muscle [11]. Hence, enormous evidence-based researches

support the ventrogluteal region as the most preferable intramuscular injection site unless it is otherwise contraindicated. However, one of the reasons for the reluctance in changing clinical practise of intramuscular injection to ventrogluteal region is due to lack of confidence among administrators in trying new technique [12].

4. CONCLUSION

In conclusion, intramuscular injection must be performed with sterile competent technique to minimise the risk of complications. Secondary gluteal abscess must be included as differential diagnosis when patient presented with "back pain" after intramuscular injection. It is highly recommended that serial close monitoring on injection site is highly essential for patients who require chronic intramuscular injection. Once tenderness, lump or hardening of muscle tissue appears on injection site, immediate investigation is needed to rule out abscess formation. Anecdotal evidence suggests the use of ventrogluteal injection site as the preferred site of injection, but such technique has not been emulated in medical settings. Therefore, new supportive education and comprehensive guidance to promote changes in new practise of injection site should be provided to administrators because the benefit of ventrogluteal injection clearly outweighs its risk.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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