

A rare case of isolated post-traumatic subscapularis abscess in a paediatric patient



Faris Indra Prahasta Bin Didi Indra^{1*}, Syed Ibrahim bin Wan Mohamad Akbar²,
Mohd Anuar Ramdhan Bin Ibrahim¹, Ong Lik Han¹

ABSTRACT

Introduction: Subscapular abscess is an extremely rare condition. To our knowledge there were nine reports on subscapular abscess in the literature, four of them happened paediatric patients. The signs and symptoms could be very subtle making the diagnosis is difficult and often delayed.

Case description: We share a rare case of isolated subscapularis abscess with no glenohumeral involvement of a healthy 9-year-old boy following blunt trauma to the shoulder treated with antibiotics and percutaneous drainage with good outcome.

Conclusion: Subscapular abscess should be suspected in a child present with fever and shoulder pain. Magnetic resonance imaging is the best modality for diagnosis as plain radiograph would not give any diagnostic help. Surgical drainage combined with antibiotics are the mainstay of treatment. However, percutaneous drainage is one of treatment options especially in paediatric patient as demonstrated in our report.

Keywords: Abscess; Child; Imaging; Infection; Subscapular; Treatment.

Cite This Article: Indra, F.I.P.B.D., Akbar, S.I.B.W.M., Ibrahim, M.A.R.B., Han, O.L. 2022. A rare case of isolated post-traumatic subscapularis abscess in a paediatric patient. *Bali Medical Journal* 11(3): 1483-1486. DOI: 10.15562/bmj.v11i3.3639

¹Orthopaedic Surgeon and Lecturer,
Faculty of Medicine and Health Sciences
Universiti Malaysia Sarawak, Malaysia;
²Orthopaedic Medial Officer Orthopaedic
Department, Sarawak General Hospital,
Kuching Sarawak, Malaysia;

*Corresponding author:
Faris Indra Prahasta Bin Didi Indra;
Orthopaedic Surgeon and Lecturer,
Faculty of Medicine and Health Sciences
Universiti Malaysia Sarawak, Malaysia;
prahasta_82@yahoo.com

Received: 2022-08-10
Accepted: 2022-09-25
Published: 2022-11-01

INTRODUCTION

A child presents with a shoulder swelling is always a diagnostic challenge for clinicians.¹⁻⁹ The differentials vary from fractures, dislocations, bone or soft tissue tumor and infection. A subscapular abscess is often diagnosed late. High index of suspicion for early detection is paramount as patient can have rapid deterioration.^{1,6,7} Early detection is important as literatures reported deaths and hematogenous spread to lungs and brain leading to pneumoniae and bacterial meningitis.^{1,6,7} Most the previous reported cases described the abscess located in the subscapularis muscle with extension to the glenohumeral or subscapular space with or without concurrent lung or brain infection.¹⁻⁹ Ninety percent of the abscesses grew *Staphylococcus aureus* from the cultures. Advanced radiological modalities such as magnetic resonance imaging (MRI) is the preferred option to achieve correct diagnosis and observe the size and location and of the collection.²⁻⁹ Thorough radiological assessment enables

the clinicians to decide on the best surgical option and approach for the treatment alongside antibiotics therapy. Our report is the first case of subscapularis abscess that was successfully treated by percutaneous drainage with favorable outcome.

CASE REPORT

An 11-year-old boy with no known medical illness came with left shoulder pain for a week duration. A day prior to his symptoms he had a fall onto his left shoulder from four feet height. Symptoms were also associated with fever for five days. Examination showed tenderness and warmth over the left shoulder with limited movement in every direction. There was no obvious swelling or any fluctuant area. Infective parameters showed a raised total white count of 18.8 (5-13x10³ u/L), erythrocyte sedimentation rate (ESR) of 71 (0-10 mm/hour) and C- reactive protein (CRP) of 1264 (<47.6 nmol/L). Plain radiographs of the left shoulder were normal. Parenteral cloxacillin was started for him empirically.

Ultrasonography of the left shoulder revealed subscapularis heterogenous collection sized 2.8x3.8x4.0cm (APxWxCC). The rest of the rotator cuff muscles were intact and there was minimal anechoic fluid at left shoulder joint of 0.2cm thickness with no echogenic debris. However, the symptoms did not resolve with antibiotics. Subsequently contrast-enhanced computed tomography (CECT) of the left shoulder was performed and showed enhancing loculated left subscapularis collection 10.4x4.1x10.4cm (APxWxH).

A left shoulder ultrasonography-guided drainage was performed under sedation. Patient was placed in prone position. Under ultrasonography guidance, left subscapularis collection is punctured with a 16G branula and total of 35cc frank pus was aspirated. Track was dilated with an 8Fr dilator and an 8Fr pigtail catheter was inserted. Post-operatively the pain was controlled well with regular analgesics prescribed for three days.

Cultures was taken from the collection and grew *Staphylococcus aureus*.

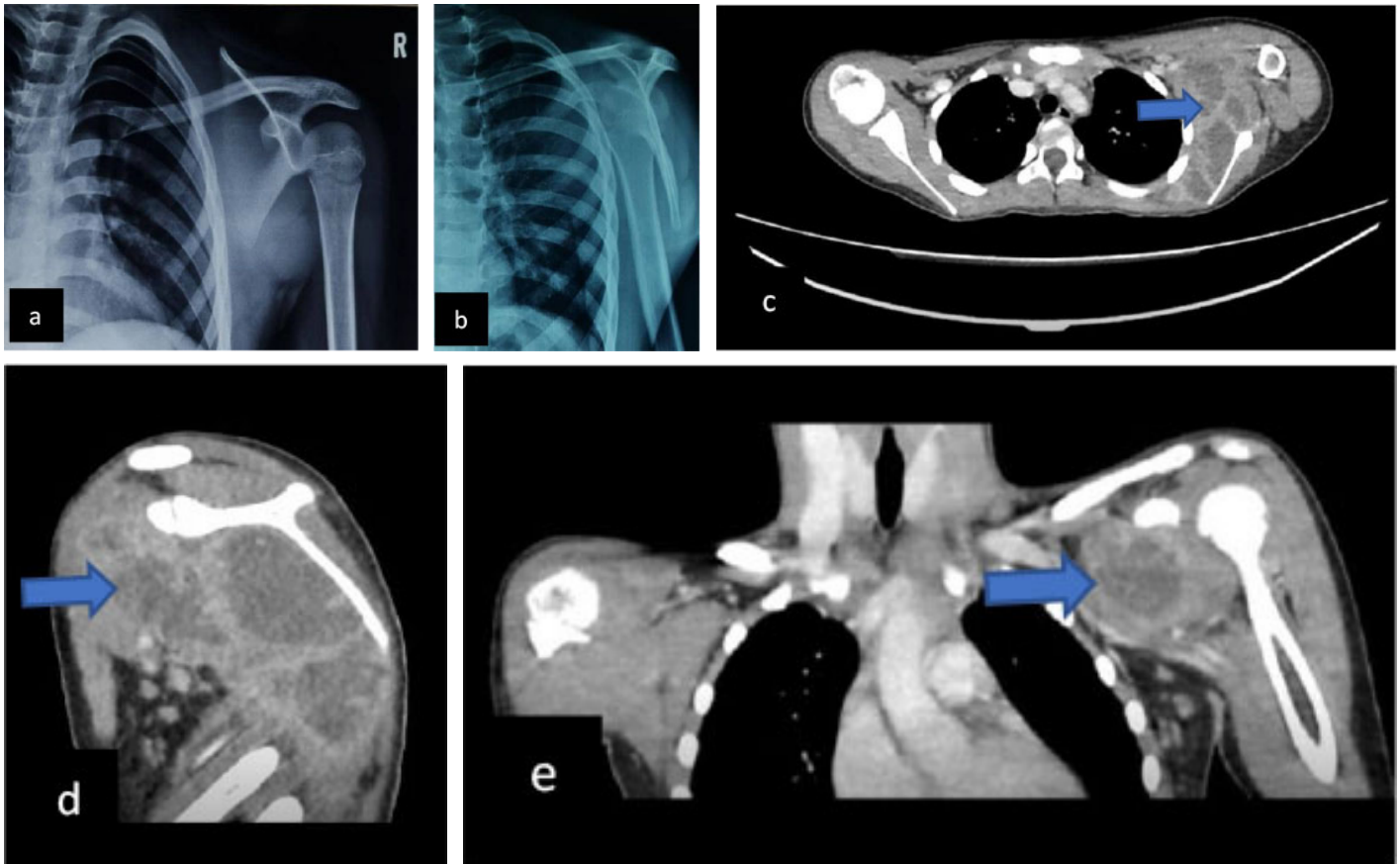


Figure 1. Radiograph of Shoulder.

(a) and (b) Plain anteroposterior and y-scapular radiographs of the left shoulder demonstrated normal findings. (c),(d),(e) Contrast-enhanced computed tomography (CECT) on axial, sagittal and coronal views of the right shoulder revealed a large left subscapularis abscess (blue arrow). There was no glenohumeral involvement.

Intravenous cloxacillin was continued for 11 days. The pigtail catheter was kept for another five days until the drain was completely empty. Infective parameters improved markedly after drainage.

On the day of discharge, there was no more tenderness over the shoulder and the range of motion subsequently improved with full flexion, extension, abduction and adduction and external and internal rotation of 0-60 degrees. Patient was discharged with oral Cloxacillin for a total of 6 weeks duration. At three months post-surgery there was no sign of recurrence and the patient exhibit full passive and active range of motion of the shoulder. Due to personal reason the patient refused for a repeat ultrasonography CECT or to observe for any residual collection.

DISCUSSION

Subscapularis abscess is rarely encountered in clinical practice especially among

children.¹⁻⁸ It is often diagnosed late due to its rarity and indistinct presentation.¹⁻⁵ There are nine cases reported in the literatures, four of them involved paediatric patients. The subscapularis muscle is deeply seated within the periscapular muscles. As a result, abscess formation in this area is rarely considered in patients presented with shoulder pain.^{4,9} Delay in diagnosis and treatment could lead to hematogenous spread and death.^{1,6-7} Reports mentioned that this disease can be precipitated by blunt trauma leading to hematoma formation, patients' immunocompromised state, underlying diabetes mellitus and presence of old or concurrent distal infection.^{1-3,7,8}

The patients with subscapularis abscess usually present with features suggestive of sepsis such as high-grade fever, chills and rigors and decreased in conscious level.¹⁻⁹ Progressive shoulder pain with restricted movement of shoulder were also reported found in the literatures.¹⁻⁹

Two from the nine cases reported had blunt injury prior to the presentation.^{2,5} Clinically the patients would have high grade temperature with reduced range of passive and active motion of the shoulder due to severe pain.¹⁻⁹ However local signs of infection such as swelling, tenderness, erythema and increase in temperature were not clinically obvious, possibly due to the deep location of the muscle within the shoulder girdle.¹⁻⁹ In 1983 a case of subscapularis abscess was diagnosed from a post-mortem autopsy who passed away 24 hours after admission in a patient who initially presented with non-specific sepsis features of fever, abdominal pain, nausea and vomiting with erythematous and tender shoulder joint.¹ Handorf et al in 1983 and Yilmaz G et al in 2012 reported concurrent lung infection while Furuahata R et al in 2019 described a simultaneous meningitis from a positive cerebrospinal fluid patient who had disturbed orientation level.^{1,6,7} Blood investigations

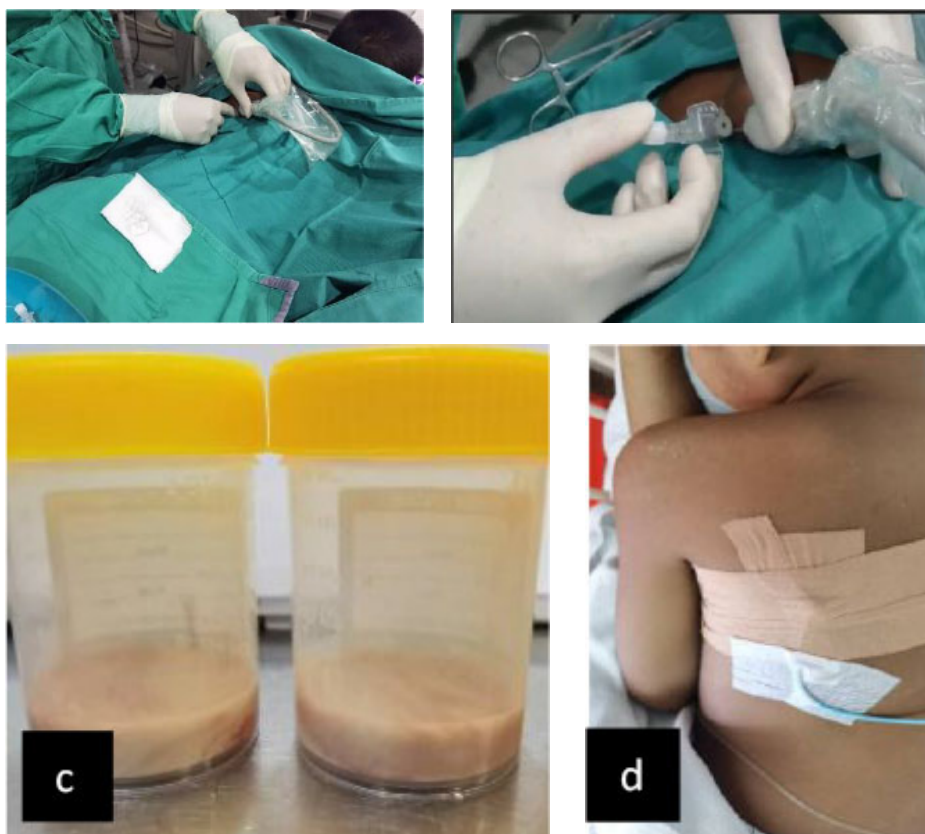


Figure 2. Left subscapularis abscess collection.

(a), (b) The patient was positioned prone. The ultrasound probe was used to utilize the location of the abscess to ensure correct placement of the pigtail catheter. (c) Thick frank pus was drained percutaneously under ultrasonography guidance. (d) The pigtail catheter was inserted medial to the left scapula to drain the collection and was kept in place post-operatively for five days until no more drainage obtained.

would show increase level of the infection parameters such as leukocytosis and elevated erythrocyte sedimentation rate (ESR) and C- reactive protein (CRP).¹⁻⁹

Plain radiograph did not have any diagnostic role in these cases.²⁻⁹ Ultrasonography was not regularly performed. Fernandez et al in 2020 performed an ultrasonography but did not notice any collection or effusion.³ The deeply seated abscess was usually detected from computed tomography (CT) or magnetic resonance imaging (MRI) scan either before the surgery for diagnostic purpose or after surgical drainage of the abscess to observe any reaccumulation and response towards the treatment initiated.²⁻⁹ Our patient had two ultrasonography assessment that revealed hematoma formation within the subscapularis muscle. Subsequently contrast-enhanced computed tomography (CECT) was

performed as minimal improvement was observed after parenteral antibiotics administration.

Early intravenous antibiotics and surgical drainage are the two mainstays of treatment. Broad antibiotics regime is administered followed by specific antibiotics after culture results are obtained from the drainage. Anterior deltopectoral approach was the most preferred approach to drain the abscess.^{3,5-7} Ryogo et al modified the traditional deltopectoral approach by separating the dorsal aspect of the subscapularis muscle from the scapula thus minimizing injury risk to the axillary artery, vein and nerves and pleural cavity.⁷ A posterolateral, medial and modified Judet incision were utilized from the back of the shoulder in three separate cases with favorable outcome.^{3,8-9}

Our case was successfully managed by an ultrasonography-assisted percutaneous

drainage that avoids large surgical incision and potential damage to the nearby musculatures and neurovascular complex. However, the success of our treatment was based only on clinical evaluation as the patient refused for a repeat ultrasonography or CECT mainly due to painless and full active range of motion of his shoulder.

CONCLUSION

We report a rare case of isolated subscapularis abscess in a pediatric patient with no involvement of the shoulder joint or subscapular fossa. This diagnosis should be considered in patient present with fever and shoulder joint pain despite no evidence of local infection around the shoulder girdle area from clinical assessment. MRI or contrasted CT scan are the best imaging modalities for accurate diagnosis. Antibiotics and surgical drainage are the preferred treatment option although our patient had the collection successfully drained by percutaneous ultrasonography-guided procedure. Being less invasive and producing smaller wound and scar, percutaneous drainage could be a reliable option especially for pediatric patients.

ETHICS IN PUBLICATION

The patient received informed consent and agreed to share his medical history and clinical image for publication.

AUTHORS CONTRIBUTIONS

All the authors contribute to patient treatment, manuscript preparation and submission.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors

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