Visual Journal of Emergency Medicine 14 (2019) 35–36

Contents lists available at ScienceDirect

Visual Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/visj

Visual Case Discussion

Septic shoulder joint diagnosed via point of care ultrasound

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ARTICLE INFO

Keywords:
Septic arthritis
Shoulder abscess
Point of care ultrasound

A 64 yo M with PMH of ESRD and DM, presented to the ED with chronic left shoulder pain with acute exacerbation over six weeks. There was no history of trauma, surgery nor procedural interventions on involved shoulder. Vital signs were within normal limits. Review of systems were negative including no fevers, chills, or night sweats. Physical exam revealed a 3 cm area of edema and mild erythema at the anterior left shoulder with limited abduction over 20 degrees secondary to pain. There was no warmth, cellulitic appearance, nor deficits in strength, sensation, or distal pulses. A radiograph of the left shoulder demonstrated mild degenerative changes with no evidence of effusion or gas.

Point-of-care ultrasound (POCUS) with linear probe[1,2] demonstrated a large fluid collection anterior to the left humeral head with evidence of gas (Fig. 1, arrow). Blood tests were remarkable for elevated ESR and CRP levels with no leukocytosis. A subsequent computed tomographic scan revealed abscess, internal gas foci, and erosive changes at the glenoid fossa and inferior acromion concerning for septic

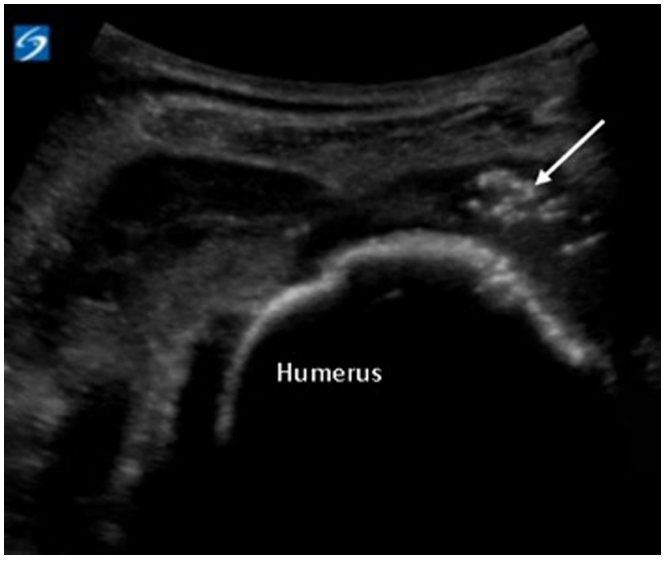

Fig. 1. A transverse ultrasonographic image of the proximal humerus with periarticular fluid and gas (arrow).

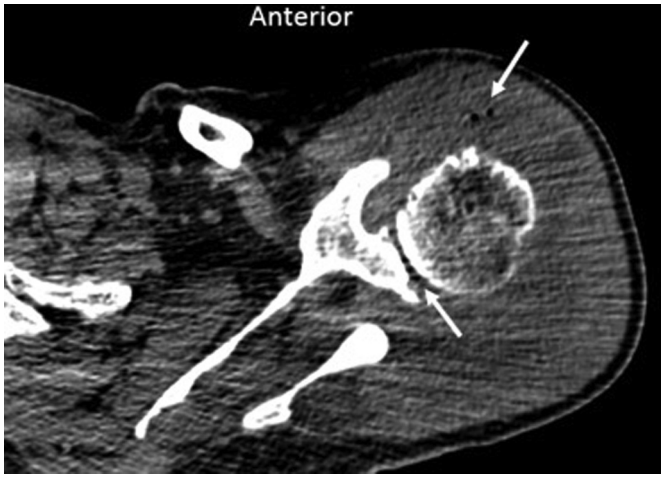

Fig. 2. Axial CT scan through shoulder with periarticular fluid collection and internal foci of gas (arrows).

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https://doi.org/10.1016/j.visj.2018.11.013
Received 30 August 2018; Received in revised form 15 November 2018; Accepted 17 November 2018

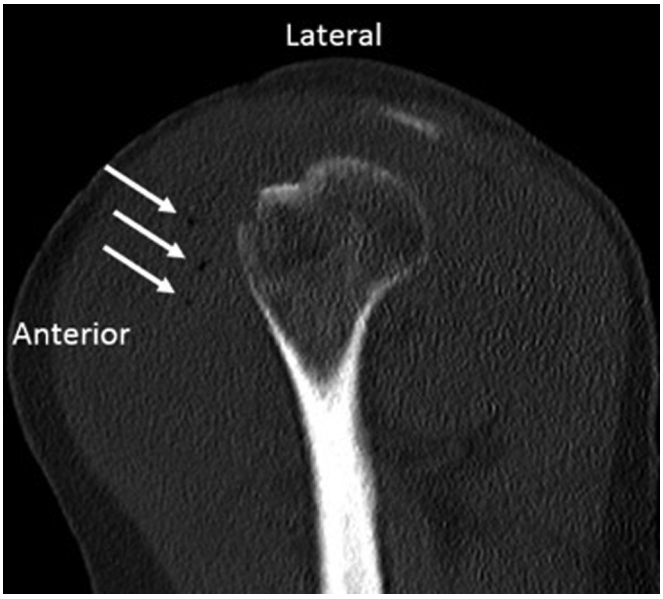

Fig. 3. Sagittal CT scan through shoulder with periarticular gas (arrows).

arthritis (Figs. 2 and 3, arrows). Surgical exploration in the OR confirmed the diagnosis with 300 mL of loculated purulent material. Patient required three weeks of IV vancomycin, cefepime, and flagyl and two additional I&D procedures for resolution with no evidence of bacteremia on blood cultures.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.visj.2018.11.013.

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Questions

1. What are the characteristic features of subcutaneous gas visualized on soft-tissue ultrasound?
   a. Round hypoechoic area with posterior enhancement
   b. “Cobblesotne” appearance
   c. “Honeycomb” appearance
   d. Bright echogenic areas with posterior acoustic shadowing

2. A 50-year-old with osteoarthritis has unilateral shoulder pain for 2 weeks. He is afebrile with point tenderness and erythema. CT of the shoulder reveals a joint abscess with bony erosion. Which of the following is the best treatment?
   a. Discharge with PO antibiotics
   b. Discharge with PO antibiotics after needle aspiration and culture collection
   c. Admit for parental antibiotics
   d. Admit for parental antibiotics and emergent surgical intervention

Answers

1. Bright echogenic areas with posterior acoustic shadowing. Explanation: Small foci of gas produced by bacteria can appear as bright echogenic areas and act as a barrier to the propagation of sound waves creating posterior acoustic shadowing. Round hypoechoic area with posterior enhancement is compatible with fluid filled cysts. A “cobblestone” appearance is usually compatible with cellulitis. A “honeycomb” appearance is compatible with nerve fibers visualized in a transverse plane.

2. Admit for parental antibiotics and emergent surgical intervention. Explanation: Septic arthritis has the potential for acute irreversible joint destruction and sepsis if inadequately treated. Appropriate therapy mandates admission for parental antibiotics and prompt orthopedic consultation for operative irrigation and drainage of infected joint.