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Ultrasound in Emergency Medicine

DIAGNOSIS OF TRAUMATIC TEMPORAL ARTERY PSEUDOANEURYSM BY ULTRASOUND IN THE EMERGENCY DEPARTMENT

Mathew Nelson, DO, FACEP,*† Kirk Szustkiewicz, DO,* and Brendon Stankard, PA-C*

*Department of Emergency Medicine, North Shore University Hospital, Manhasset and †Division of Emergency Ultrasound, Northwell Health, Great Neck, New York

Corresponding Address: Mathew Nelson, DO, FACEP, Department of Emergency Medicine, North Shore University Hospital, 300 Community Drive, Manhasset, NY 10030

□ **Abstract—Background: Emergency bedside point-of-care ultrasound provides an extremely fast and cost-effective diagnostic modality for the diagnosis of vascular abnormalities, such as pseudoaneurysms. The cost–benefit and timing advantages of ultrasound are increasingly apparent when compared to more conventional diagnostic tests, such as computed tomography angiography and magnetic resonance angiography scans. Case Report: A 33-year-old man with no medical history presented to our emergency department complaining of a constant, throbbing, left-sided headache over his temple with an associated mass. The physical examination revealed a 0.5-cm, tender, flesh-colored, pulsatile mass over his left temple. The tender mass was evaluated at the bedside by an emergency physician with a linear array L-14 probe on the ZONARE ultrasound system (ZONARE Medical Systems, Inc., Mountain View, CA). A small anechoic collection adjacent to the superficial temporal artery was identified with a sac containing flow in a prototypical "yin and yang" pattern. These findings were consistent with a superficial temporal artery pseudoaneurysm. Why Should an Emergency Physician be Aware of This?: We present this case report because of the implications of missing the diagnosis. Emergency physicians should be aware of the possible diagnosis of pseudoaneurysm of the temporal artery because of the plethora of head injuries that we evaluate on a regular basis. Missing the diagnosis can lead to delayed neurologic sequela and potential life-threatening bleeding in patients presenting with what appears to be a minor complaint.**

□ **Keywords—pseudoaneurysm; ultrasound**

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INTRODUCTION

Emergency bedside point-of-care ultrasound (POCUS) provides an extremely fast and cost-effective diagnostic modality for the diagnosis of vascular abnormalities, such as pseudoaneurysms. The cost–benefit and timing advantages of ultrasound are increasingly apparent when compared to the more conventional diagnostic tests, such as computed tomography angiography (CTA) and magnetic resonance angiography scans. Emergency physicians routinely make the diagnosis of pseudoaneurysm in patients presenting with groin masses after cardiac angiography (Figure 1). We describe a case of a superficial temporal artery pseudoaneurysm diagnosed with POCUS.

CASE REPORT

A 33-year-old man with a medical history that was negative for any chronic disease presented to our emergency department complaining of a constant, throbbing, left-sided headache over his temple with an associated mass (Figure 2). His symptoms began 1 week earlier after the

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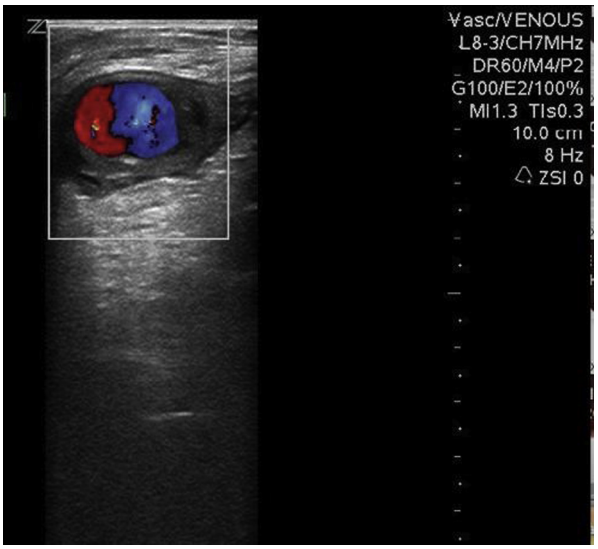

Figure 1. Ultrasound depicting typical yin and yang sign of femoral pseudoaneurysm.

patient had been punched to the side of the head multiple times during an altercation. He was evaluated during his first medical visit for this complaint. The patient stated that there was originally a great deal of swelling and ecchymosis in that area around his left eye and that vision from his left eye was blurry afterward. The patient reported that the swelling, bruising, and visual complaints had resolved and that only the pain and this focal mass remained. A review of systems was otherwise negative. The physical examination revealed a 0.5-cm, tender, flesh-colored, pulsatile mass over his left temple and a small subconjunctival hemorrhage in his left eye. The rest of the patient's physical examination was normal.

Figure 2. Temporal artery pseudoaneurysm.

The tender mass was evaluated at the bedside by an emergency physician with a linear array L-14 probe on a ZONARE ultrasound system (ZONARE Medical Systems, Inc., Mountain View, CA). The probe was held on the same plane as the vessel, allowing the vessel to be visualized along its longitudinal axis. A small anechoic collection adjacent to the superficial temporal artery was identified that measured 0.4 × 0.6 cm in diameter. When color Doppler ultrasound was applied, a "to and fro" stalk was identified with a sac containing flow in a prototypical "yin and yang" pattern (Figures 3 and 4). These findings were consistent with a superficial temporal artery pseudoaneurysm. The vascular surgery and neuroradiology departments were consulted, and a CTA scan was requested to confirm the diagnosis. The patient was given analgesia, and the subsequent CTA scan confirmed the initial POCUS diagnosis. The patient was admitted to the vascular surgery department and had successful surgical ligation and resection of the pseudoaneurysm on the following day. He was discharged from the hospital on postoperative day 2 and had no significant sequelae on follow-up.

DISCUSSION

Traumatic superficial temporal artery pseudoaneurysms are extremely rare. Approximately 400 cases have been documented since their original description in the mid-1600s (1,2). Spontaneous temporal artery pseudoaneurysms also

Figure 3. Ultrasound of temporal artery pseudoaneurysm. Note the blue/red yin and yang sign depicting flow towards and away from the probe. (Color version of figure is available online.)