Title: Superficial temporal artery pseudoaneurysm presenting as suspected sebaceous cyst

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Case: A 20 year old male presented to emergency department (ED) requesting to have a “cyst” his scalp drained. The patient stated he first noticed the cyst about 1.5 years ago, which seemed to develop after he was hit on the head during an altercation. He reported that it was drained about in this ED 6-8 months prior but did not resolve. On examination the left temporal scalp had a 2cm indurated cystic subcutaneous lesion that was minimally tender, without any drainage or overlying erythema. The patient was advised that it appeared to be sebaceous cyst, which would likely recur until formally excised. Due to his mild discomfort, he opted for incision and drainage pending his clinic referral. After prep and local anesthesia, incision yielded only brisk bleeding which was easily controlled with fingertip pressure but required suture placement for complete hemostasis. The lesion was felt to be faintly pulsatile while holding pressure. Point of care (POC) ultrasound evaluation performed with a high frequency linear array probe demonstrated the “cyst” (Figure 1) to be a superficial temporal artery (STA) pseudoaneurysm. Standard B mode imaging clearly showed turbulent blood flow (Figure 2). Color doppler imaging (Figure 3) demonstrated typical swirling of blood within the aneurysm (the “yin-yang” sign). Vascular surgery was consulted and arrangements made for outpatient excision of the lesion. At surgery approximately 1 month later, the lesion was confirmed to be a pseudoaneurysm.

Discussion: Superficial temporal artery aneurysms are uncommon vascular lesions. Pseudoaneurysms of the STA can develop after local trauma to the scalp (1,2) or operative procedures (3). True aneurysms are due to pathologic dilatation of all 3 layers of the vessel wall (4), while a pseudoaneurysm results from a contained blood leak from the artery typically secondary to local vessel trauma (3). It was thought that the STA may have been injured during the patient’s previous I&D, but review of that record revealed that only blood (no purulent or sebaceous material) was
obtained. The patient likely suffered a small injury to the vessel during the
altercation he reported prior to development of the “cyst”. Although typically
referred to as STA aneurysms, lesions developing as a result of trauma are actually
pseudoaneurysms (1). True STA aneurysms can develop spontaneously (4).
Treatment typically involves surgical resection, but non-surgical options (such as
thrombin injection, coils, and endovascular obliteration) have also been described
(3).

Subcutaneous lesions can mimic one another and are often difficult to accurately
diagnose clinically. Many lesions simply present with an indurated area with or
without tenderness, redness, or visible drainage. POC ultrasound readily allows for
differentiation of cellulitis, abscess, lipoma, lymph node, as well as vascular lesions
(such as aneurysms and pseudoaneurysms), and hernias. A history of trauma to the
region should increase suspicion for a vascular lesion (1,2). Increased availability
and use of POC ultrasound in the ED can enhance diagnostic accuracy, and thus
improve clinical care. Pseudoaneurysms usually demonstrate a characteristic
circular blood flow within the lesion, referred to at the yin-yang sign on color
doppler imaging (5).

This case is an illustrative example of an incorrect assessment of a subcutaneous
lesion. That incorrect assessment led to an unnecessary and potentially hazardous
procedure. This procedure would not have been performed if we had first
performed point-of-care ultrasound (POCUS) to determine whether or not the lesion
was a cyst, an abscess, or something else. Bedside ultrasound prior to the procedure
would have provided the correct diagnosis, and does not expose the patient to
intravenous contrast or radiation. Appropriate follow-up would have been
arranged, and the ED visit would have been much shorter.

References:
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5. The to and fro sign: the hallmark of pseudoaneuerysm. Rozen G, Samuels D,
Figure 1. Scalp lesion with gross appearance of typical sebaceous cyst.

Figures 1 & 2. Available as supplementary files from: