Evaluating Endoleaks in the Dermatology Office

Kylee N. Crittenden, DO; G. Trey Haunson, DO; Garrett R. Bohrnstedt, DO; Daniel S. Hurd, DO

PRACTICE **POINTS**

- An endoleak should be considered in any patient with a thoracic subcutaneous mass and history of aneurysm repair.
- Order imaging when an endoleak is suspected, including computed tomography angiography. Endoleaks can result in substantial morbidity and mortality if they are not recognized and treated appropriately.
- Dermatologists should be familiar with and able to recognize endoleaks, as patients may present to a dermatologist for evaluation of a subcutaneous mass that proves to be an endoleak.

We report the case of a 69-year-old woman who was referred to our dermatology office by her primary care physician for evaluation of a subcutaneous mass overlying the right mid sternum, which was a suspected lipoma. The mass was asymptomatic and had been present for approximately 2 weeks. The patient had undergone an aortic valve replacement approximately 2.5 years prior for treatment of an ascending aortic aneurysm. Physical examination revealed a mass located at the site of the thoracotomy scar. She was referred for an ultrasound and computed tomography angiography. Results of computed tomography angiography were consistent with a type V endoleak, and the patient was then referred to a cardiothoracic surgeon for treatment. Our case represents an unusual entity for presentation at a dermatology clinic, but endoleaks can have dire consequences if they are not recognized and treated appropriately. Dermatologists should be aware of the clinical presentation of endoleaks and this article explains the causes.

Cutis. 2015;96:97-99.

Endoleaks are common complications following endovascular aneurysm repairs (EVARs) that may occur any time after surgery. There are 5 types of endoleaks with various etiologies. A type V endoleak (also known as endotension) is not considered a true endoleak but instead is characterized by continued aneurysm expansion without a leak, which is demonstrated via imaging tests.[1] Type V endoleaks typically require open aneurysm repair.[2] We report the case of a 69-year-old woman who presented to our dermatology office for treatment of a suspected lipoma overlying the right mid sternum that was confirmed to be a type V endoleak via computed tomography angiography.

Case Report

A 69-year-old woman was referred to our dermatology office by her primary care physician for

Dr. Crittenden is from O'Bleness Memorial Hospital, Athens, Ohio. Drs. Haunson and Hurd are from LewisGale Hospital Montgomery, Blacksburg, Virginia. Dr. Bohrnstedt is from New River Dermatology, Blacksburg.
The authors report no conflict of interest.
Correspondence: Kylee N. Crittenden, DO, 55 Hospital Dr, Athens, OH 45701 (kylee.n.crittenden@gmail.com).

evaluation of a subcutaneous mass overlying the right mid sternum, which was a suspected lipoma. The patient reported that the mass had been present for approximately 2 weeks and was enlarging but otherwise asymptomatic. Her medical history was remarkable for hypertension, an ascending aortic aneurysm, and a subsequent aortic valve replacement approximately 2.5 years prior. Her current medications included amlodipine, lisinopril, nebivolol, ibuprofen, and aspirin. She denied use of alcohol, tobacco, or illicit drugs. A review of systems was noncontributory.

Physical examination revealed a single 3.5×4.5-cm, soft, nonmobile subcutaneous mass located at the site of the thoracotomy scar (Figure 1). The mass appeared to have a central attachment to the sternum. No erythema, swelling, or exudate was noted, and the patient denied tenderness on palpation. The diagnosis of lipoma was questioned, and the patient was referred for ultrasonography and computed tomography angiography. Ultrasonography showed a nonspecific chest wall mass with internal blood flow, and computed tomography angiography showed a large, low-attenuation collection of blood around the entire circumference of the ascending aorta, extending from the aortic root to the arch of the aorta. There was extension of the collection of blood through either the sternocostal junction or the sternotomy defect into the subcutaneous tissue anterior to the sternum (Figure 2). Findings were most consistent with a type V endoleak, and the patient was referred to a cardiothoracic surgeon for treatment. We later learned that our patient died during surgery attempting to repair the aneurysm approximately 2 weeks after her presentation to our office.

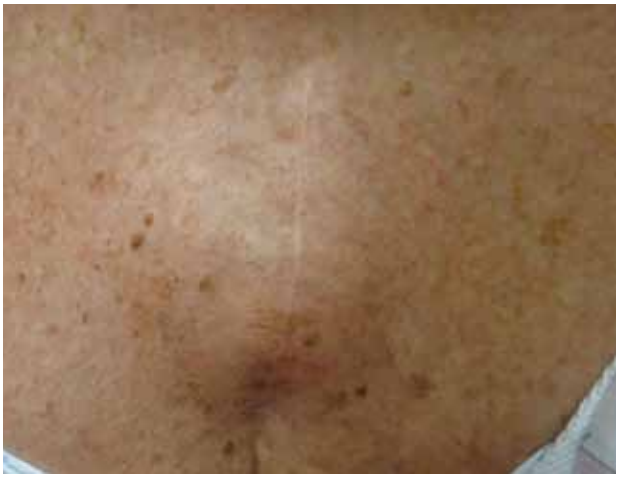

Figure 1. Nontender nonmobile subcutaneous mass located overlying the right mid sternum.

Comment

An endoleak is a common complication following an EVAR that is characterized by persistent blood flow within the aneurysm sac. Endoleaks have been described as the Achilles' heel of EVARs.[1] The goal of an EVAR is to create a complete seal so that the flow of blood completely excludes the aneurysm, thus ultimately preventing an aneurysm rupture. An endoleak results when there is failure to obtain a complete seal due to a variety of different mechanisms. White et al[3] first described and classified endoleaks in 1997. The initial terminology used to classify endoleaks was based on timing (primary or secondary/late) and location (graft related/perigraft or non–graft related/retrograde). Today, endoleaks are classified into 5 types, 3 of which are considered true endoleaks and 2 of which are not.[4] Type I endoleaks result from a failure to create an adequate seal at one of the attachments of the graft to the vessel wall. Type II endoleaks are due to retrograde flow through collateral vessels into the aneurysm sac.

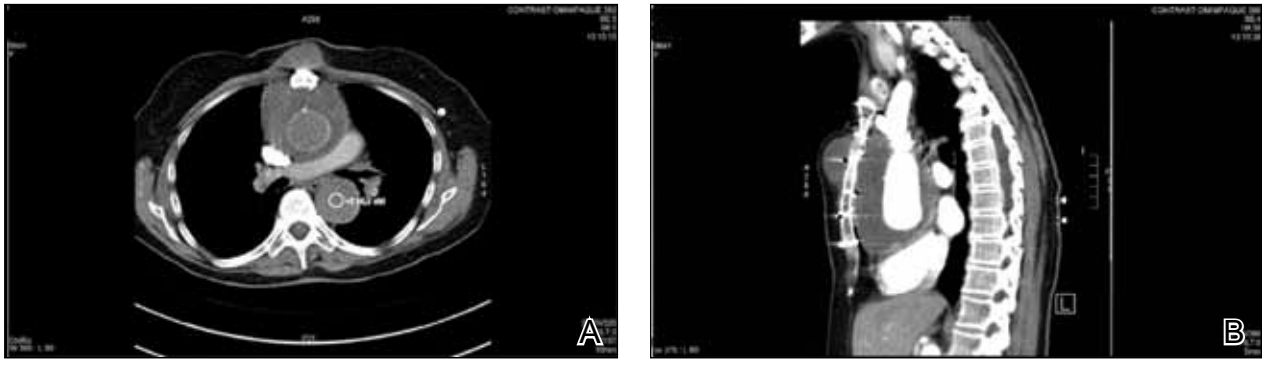

Figure 2. Transverse (A) and sagittal (B) sections of the computed tomography angiography illustrating a type V endoleak.

They are much more common than type I, occurring in 10% to 25% of abdominal endograft cases. The last true endoleak, type III, occurs due to device failure in the form of disjunction of the components of the graft system (type IIIa) or a defect in the graft fabric (type IIIb). Type IV and type V endoleaks are not considered to be true endoleaks. Type IV endoleaks are due to the porosity of the graft material and have virtually been eliminated by changes in graft materials to decrease porosity. Type V endoleaks are characterized by continued blood flow into the aneurysm without any evidence of a leak on any imaging modality. Type V endoleaks are poorly understood but are believed to be due to pulsation of the graft wall, which is transmitted through the perivascular space to the aneurysm wall.[4]

Treatment of type V endoleaks is controversial. It is important to characterize the endoleak by various imaging modalities, and if a type V endoleak is confirmed, an open aneurysm repair often is required.[2] A case of nonsurgical management of a type V endoleak has been described but is rare.[5] In this case, the patient was referred to our dermatology office by her primary care physician for what appeared to be a benign lipoma, but it proved to be a type V endoleak on further examination. It is imperative that dermatologists are aware of endoleaks as common complications of EVARs, as they can be life threatening and usually require surgical intervention.

Conclusion

Endoleaks are common complications of EVARs. Dermatologists may encounter endoleaks that have been misdiagnosed as benign subcutaneous masses such as lipomas. It is imperative that dermatologists are aware of endoleaks, and patients who present with subcutaneous thoracic masses with a history of aneurysm repair require imaging, including computed tomography angiography, and referral to a cardiothoracic surgeon if appropriate.

REFERENCES

1. Rosen RJ, Green RM. Endoleak management following endovascular aneurysm repair. *J Vasc Interv Radiol*. 2008;19(suppl 6):S37-S43.
2. Stavropoulos SW, Charagundla SR. Imaging techniques for detection and management of endoleaks after endovascular aortic aneurysm repair. *Radiology*. 2007;243:641-655.
3. White GH, Yu W, May J, et al. Endoleak as a complication of endoluminal grafting of abdominal aortic aneurysms: classification, incidence, diagnosis and management. *J Endovascular Surg*. 1997;4:152-168.
4. Veith FJ, Baum BA, Ohki T, et al. Nature and significance of endoleaks and endotension: summary of opinions expressed at an international conference. *J Vasc Surg*. 2002;35:1029-1035.
5. Mennander A, Pimenoff G, Heikkinen M, et al. Nonoperative approach to endotension. *J Vasc Surg*. 2005;42:194-198.