

Spontaneous Intercostal Artery Bleeding With Hemothorax

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Background

- Spontaneous intercostal artery bleed is a relatively rare occurrence in the absence of underlying trauma or pathologies that contribute to arterial wall weakening and aneurysm formation (e.g. Ehlers danlos, Marfans disease, Neurofibromatosis type I, coarctation of the aorta, etc.).
- To the best of our knowledge, this is one of only a few cases of spontaneous bleeding to occur in a patient without any trauma or contributing underlying pathology.

Objective

- To bring attention to a relatively rare, albeit important consideration in the relatively healthy patient presenting with chest/abdominal/flank pain following cough.

Case Introduction

A 50 year old male with a PMH of HTN, NIDDM2, gout, OSA, and nephrolithiasis presented with a **CC of right-sided chest pain of 1 week duration with associated extensive chest wall hematoma.**

The patient **denied trauma** but did report **progressively worsening cough of 3 weeks duration.**

On arrival, patient was **tachycardic and hypertensive.**

In the ED, a **bedside US was performed for possible AAA, but was inconclusive** for source of bleeding, due to body habitus and bowel gas.

Labs were significant for a **hemoglobin of 10.8 and a lactic acid of 2.93.**

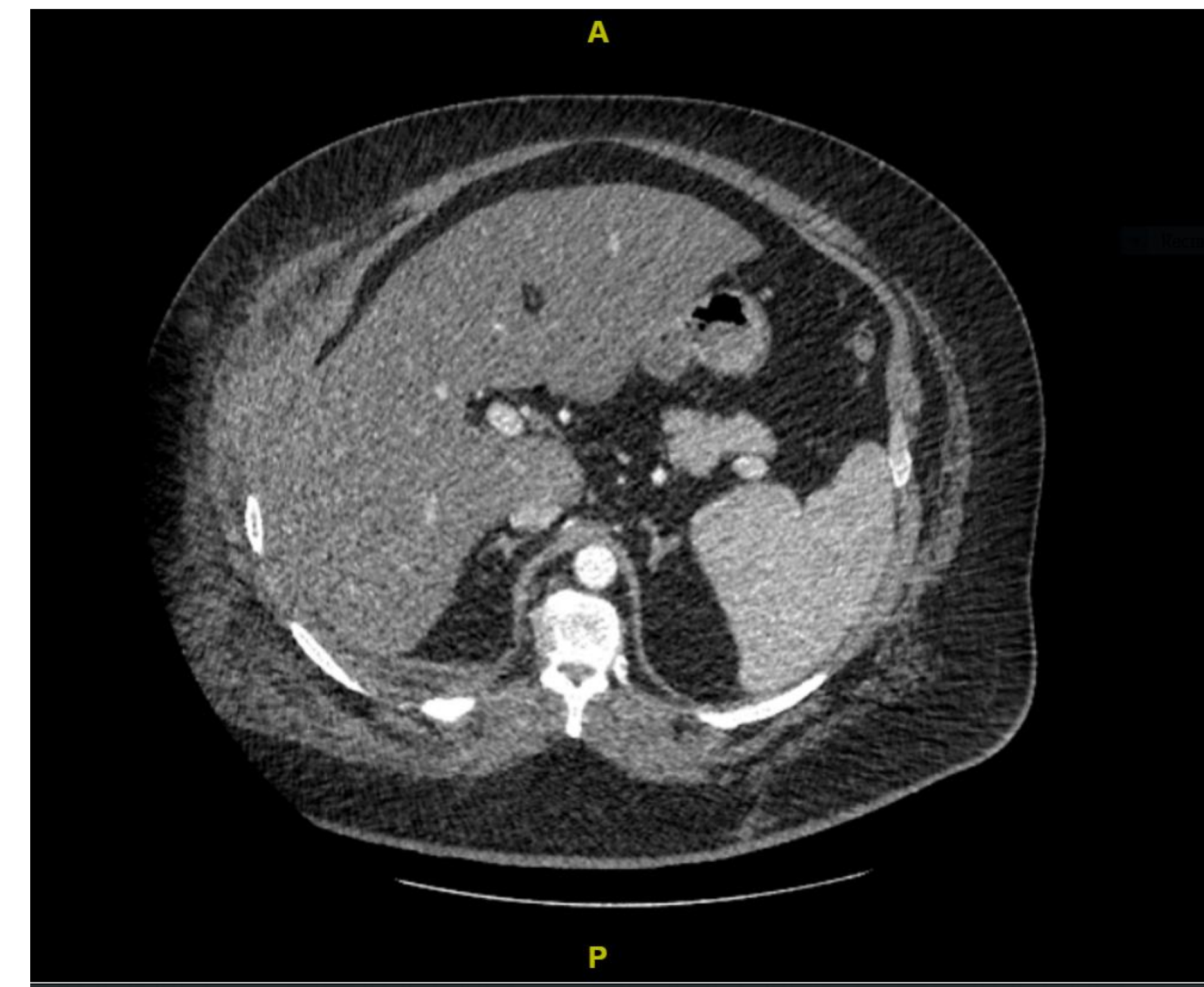
CXR revealed cardiomegaly with pulmonary vascular congestion in the right mid- to lower lung fields.

Formal abdominal US again suboptimal due to body habitus and bowel gas, but showed enlarged fatty liver with cholelithiasis.

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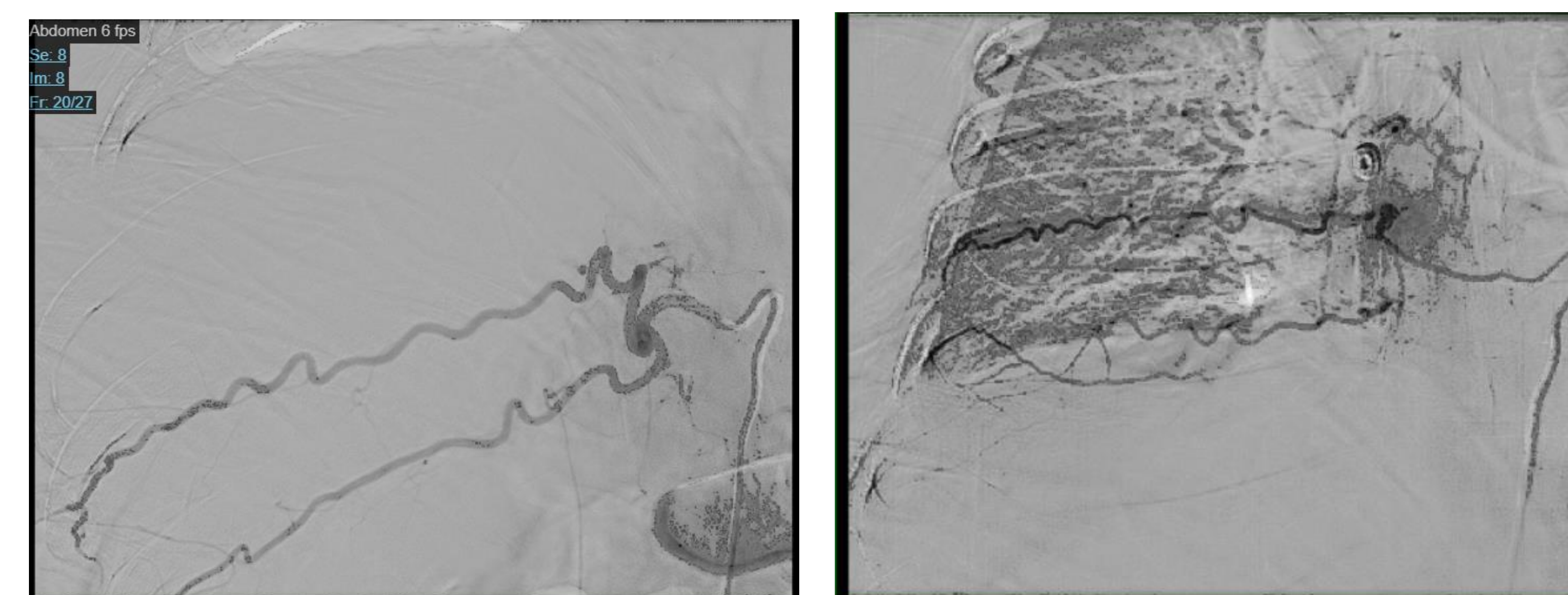
Hospital Course

- CTA chest/abdomen/pelvis was obtained and showed **ventral/R abdominal/lower chest soft tissue hematoma with some drainage to right pleural space,** suspect due to injury to an intercostal vessel with oozing hemorrhage; no suggestion of active extravasation at this time.



• Figure 1. CT chest/abdomen/pelvis showing right sided hematoma

- **IR was consulted for embolization and drainage.** Patient underwent T8-T11 intercostal arteriogram showing no normal tapering of these vessels raising the possibility of a recent hemorrhage with compensatory hypertrophy. **Uncomplicated superselective embolization using 3-4 mm microcoils was subsequently performed.**



• Figure 2 and 3. Angiography and transcatheter arterial embolization of right intercostal T8-T11 arteries

- Patient's cough was treated symptomatically. Given the extent of the hematoma, hematology was consulted. **Coagulation studies, platelets and platelet function assay were performed and unremarkable.** Hemoglobin was trended and remained stable.

Discussion

- In our case, **history, physical exam, and imaging did not reveal any rib fractures or evidence of trauma and did not suggest the presence of the above-mentioned diseases.**
- **Obesity (BMI 43.2) may have played a role** due to changes in vascularity and the extracellular matrix in the subcutaneous tissue
- Patient had also reported **taking NSAIDs which may have contributed to platelet dysfunction and extent of the hematoma** when combined with increased intrathoracic pressure from coughing
- Diagnosis can be made via **contrast enhanced CT and angiography** can localize the bleed..
- **Transarterial embolization (TAE) is the preferred treatment modality** as it is minimally invasive and considered useful as it can be performed immediately. However, the possibility of rebleeding remains. **In more severe or refractory cases, surgery may be required.**

Conclusion

- Although it is relatively rare, injury to the intercostal artery should be considered in the differential diagnosis when patients complain of chest, abdominal, or flank pain after strong coughing or sneezing

References

1. Afonso C, Pereira J, Gil-Agostinho A, Casimiro C. Spontaneous rupture of an intercostal artery. *BMJ Case Rep.* 2020;13:e233242
2. Dua, A., Dua, A., Jechow, S., Desai, S.S., & Kuy, S. (2014, June). Idiopathic spontaneous rupture of an intercostal artery. *WMJ : Official publication of the State Medical Society of Wisconsin*, 113(3), 116-8.
3. Jang J, Lim Y, Woo J, Jang J. Spontaneous rupture of intercostal artery after severe cough. *AM J Emerg. Med.* 2015;33:131.e1-e3.
4. Mathew R, Abdullah S, Renfrew I. Massive abdominal wall hematoma and hemothorax due to spontaneous rupture of an intercostal artery. *Emerg Med J.* 2008;25:608.
5. Yu W, Wang C, Ng K, Chen W, Tzeng I. Successful embolization of a ruptured intercostal artery after violent coughing. *Am J Emerg Med.* 2006;24:247-49.