

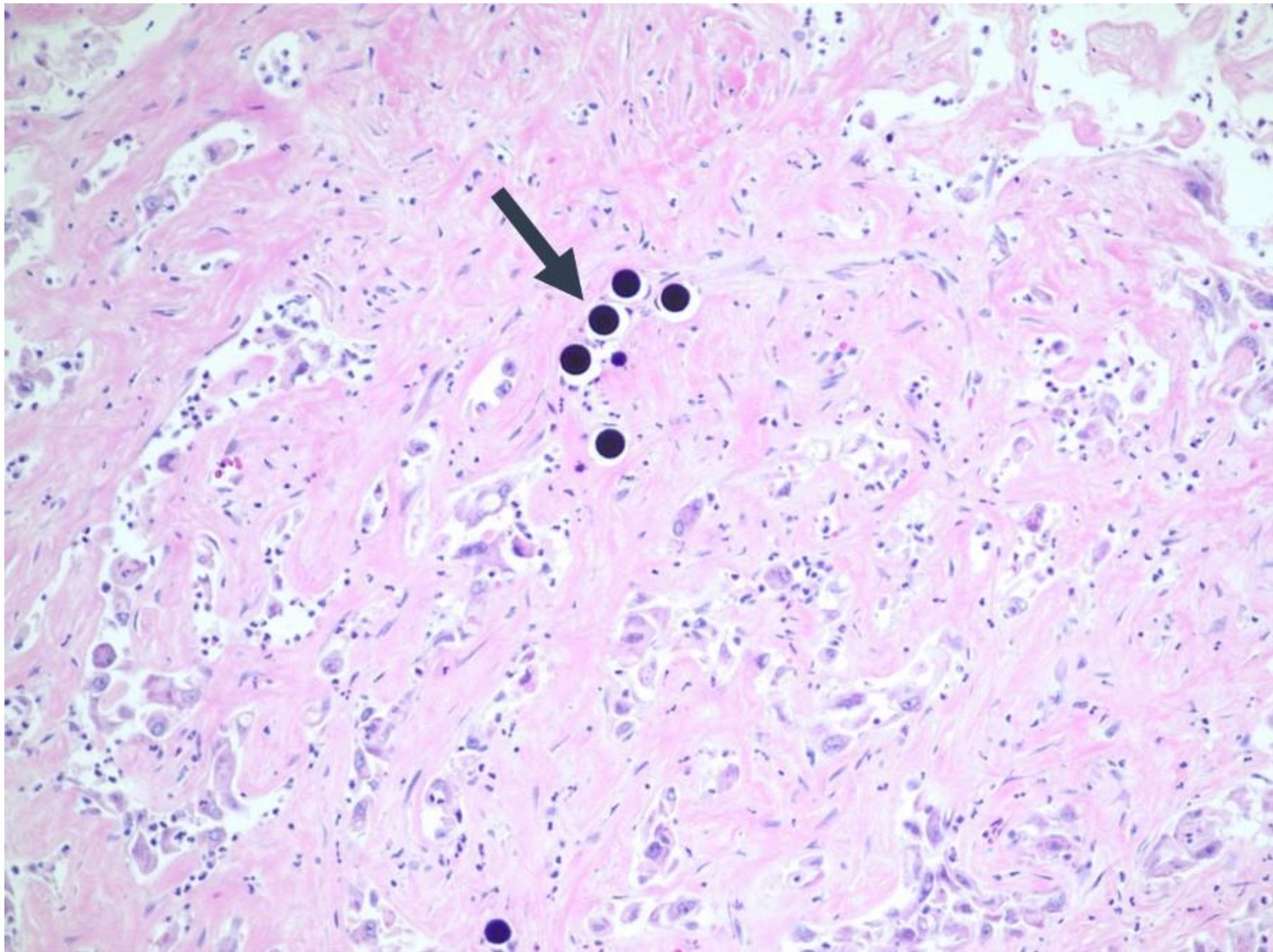


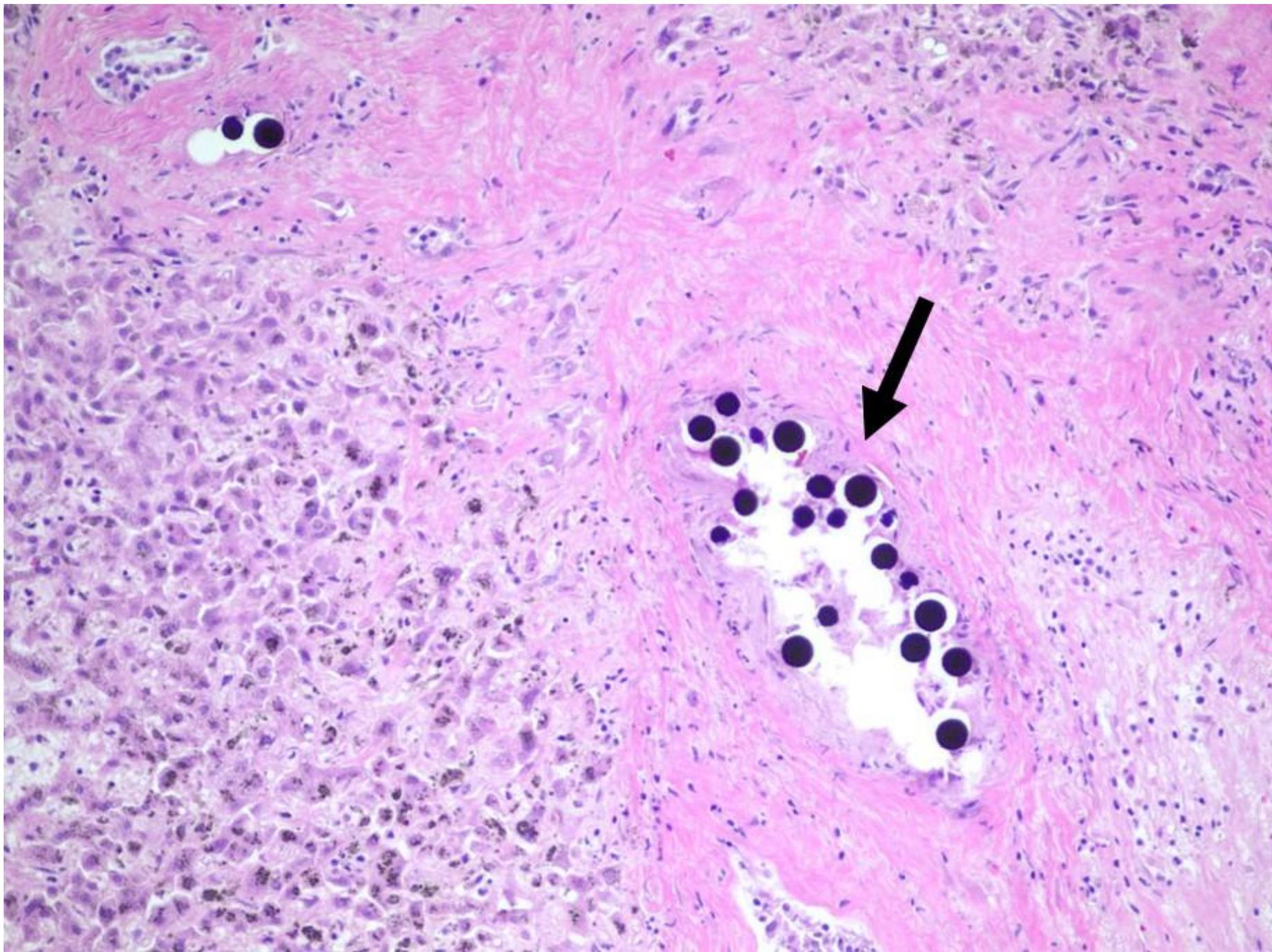
Case #61

NAME Educational Activities Committee

Case provided by:

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1. An elderly female was found dead at home by her husband. The autopsy was most significant for an acute myocardial infarct with rupture due to hypertensive and atherosclerotic cardiovascular disease. The autopsy was also notable for a multilobulated, firm, white-tan lesion in the liver that measured up to 7 cm in greatest dimension (see attached images). What is the histologic finding indicated by the arrows?

- Cryptococcus
- Calcium deposits
- Suture material
- Snakeshot
- Radioembolization beads

Answer...

E. Radioembolization beads – (CORRECT ANSWER, 79.54 % of responses)

Patients with unresectable liver tumors may undergo radioembolization therapy, which is a targeted therapy that delivers radiation dose directly to the tumor via its arterial supply. This therapy may include yttrium-90 (Y-90) beads or microspherules which appear as black and uniformly spherical depositions in H&E tissue sections. The decedent had a history of cholangiocarcinoma treated with chemotherapy and recent radioisotope treatment.

A. Cryptococcus (10.9 % of responses)

Cryptococcus is a fungus that has a thick capsule made of polysaccharides, commonly found in bird droppings and decaying wood. Infection occurs with inhalation of the spores. Although immunocompetent patients will remain asymptomatic, hematogenous dissemination can occur in immunosuppressed patients. Histologically, one can expect to see an inflammatory response in tissues, tissue architectural effacement, and possible necrosis. Usually, a silver stain for yeast forms and mucicarmine stain for yeast and capsule forms aid in the diagnosis.

B. Calcium deposits (7.27 % of responses)

Calcium deposition has different subtypes, which include metastatic calcification (calcium deposits in uninjured tissue and abnormal calcium/phosphate levels) and dystrophic calcification (calcium deposits in previously injured tissue with normal calcium/phosphate levels). On H&E, they appear basophilic, clumped, or amorphous and granular. The calcium salt stain von Kossa can be used, which will stain the deposits black. Although in our picture there is presence of material in the vessels and tissue, they are uniformly spherical with smooth edges, making calcium deposits unlikely.

C. Suture material (1.53 % of responses)

On histology, suture material generally appears as glassy polygonal isomorphous structures that are birefringent on polarized light. If in place for a few days, sutures are usually accompanied by foreign body type reactions that can include granulomas. The deposits in our pictures are not consistent with suture material.

D. Snakeshot (0.76 % of responses)

The findings depicted in our images show microscopic deposits of black foreign material that are uniformly spherical with smooth edges. Snakeshot usually consists of number #12 shot, which is generally ~1.3 mm in diameter, and therefore much larger than the deposits seen in our image. Occasionally in firearm injuries can have soot deposition on histology, but those would appear as black granular material, rather than uniform and smooth-edged deposits.

REFERENCES

1. Gitto L, Stoppacher R. Gunshot wounds. PathologyOutlines.com website. <https://www.pathologyoutlines.com/topic/forensicsgunshotwounds.html>. Accessed December 8th, 2022.
2. Guarner J, Brandt M. Histopathologic diagnosis of Fungal Infections in the 21st Century. *Clinical Microbiology Reviews*, American Society of Microbiology. 2011 March. doi.org/10.1128/CMR.00053-10.
3. Kumar, Abbas, Aster. Robbins and Cotran. Pathologic Basis of Disease. 9th edition.2018
4. Mada PK, Jamil RT, Alam MU. Cryptococcus. [Updated 2022 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-.
5. Reiter N, El-Shabrawi L, Leinweber B, Berghold A, Aberer E. Calcinosis cutis: part I. Diagnostic pathway. *J Am Acad Dermatol*. 2011;65(1):1-14. doi:10.1016/j.jaad.2010.08.038
6. Sonal G, Rashmi N, Jayadeva H, Ahmed Mujib B. Suture Artefacts: Explored through polarising microscope. *Sultan Qaboos Univ Med J*. 2012 May;12(2):247-8. doi: 10.12816/0003123. Epub 2012 Apr 9. PMID: 22548149; PMCID: PMC3327577.
7. Voruganti IS, Godwin JL, Adrain A, Feller E. A Woman with Black Beads in Her Stomach: Severe Gastric Ulceration Caused by Yttrium-90 Radioembolization. *Case Rep Med*. 2018;2018:1413724. Published 2018 Apr 15. doi:10.1155/2018/1413724