



# Radiology-Pathology Correlation: Liver edition

Michael Cameron Hayes





# Our patient

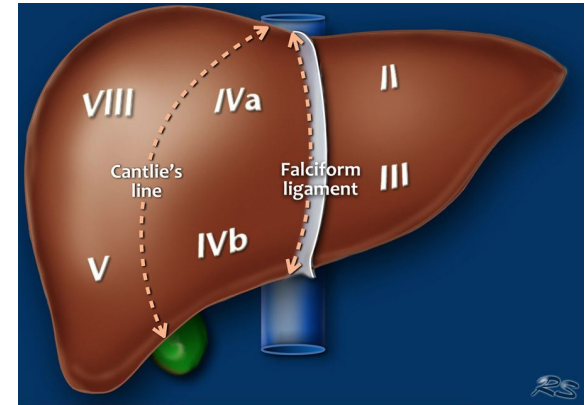
56 y.o. male with PMHx significant for metastatic melanoma, hypertrophic obstructive cardiomyopathy, and GERD who presents for evaluation of new liver mass found on imaging.

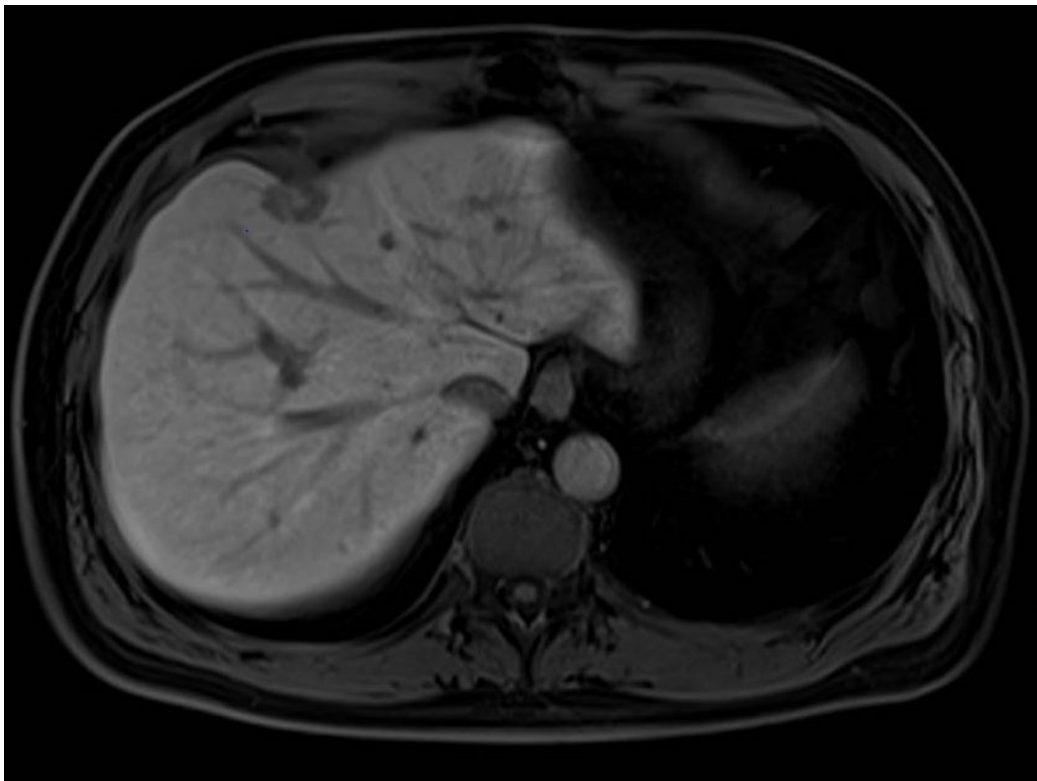
# Our patient

He has a personal history of malignant melanoma starting in January 2015, with multiple subsequent cutaneous and axillary recurrences.

Restaging scans revealed a new liver lesion concerning for metastatic disease, which was treated with percutaneous ablation in April 2019.

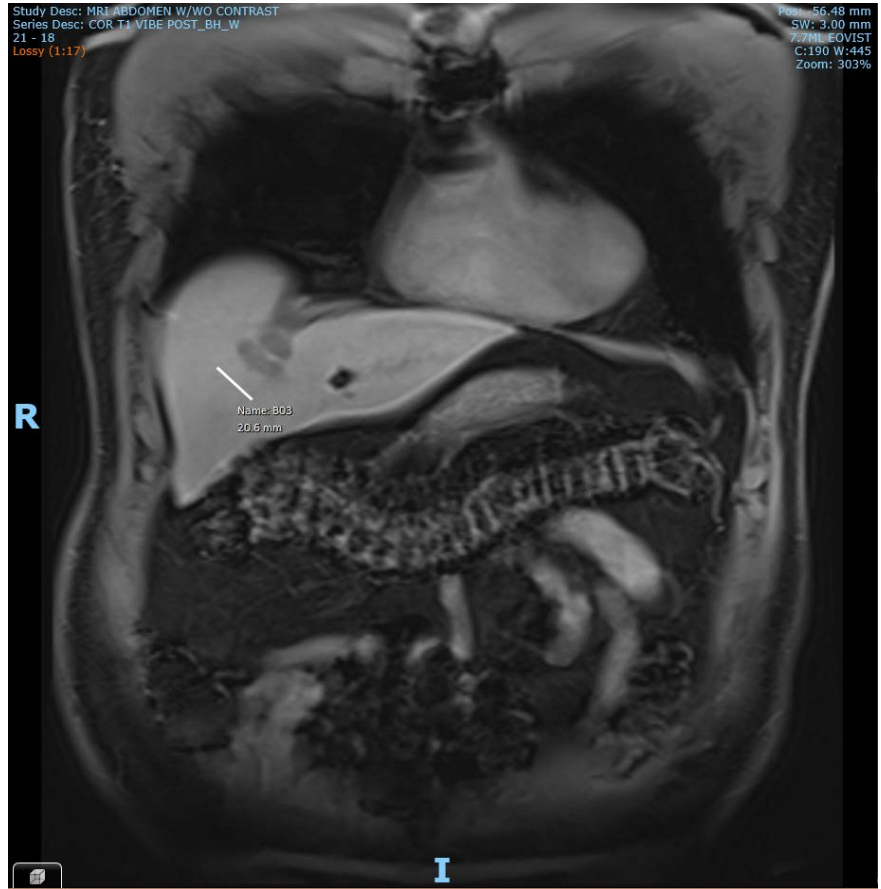
Follow up MRI revealed a new mass in December 2019, which was located in segment 4A of the left hepatic lobe and inseparable from the ablation zone.





Study Desc: MRI ABDOMEN W/O CONTRAST  
Series Desc: COR T1 VIBE POST\_BH\_W  
21 - 18  
Lossy (1:17)

Pos: 56.48 mm  
SW: 3.00 mm  
7.7ML EOVIST  
C:190 W:445  
Zoom: 303%



## Initial strategy

We planned for a US-guided segment 4A liver biopsy with a subxiphoid approach under conscious sedation.

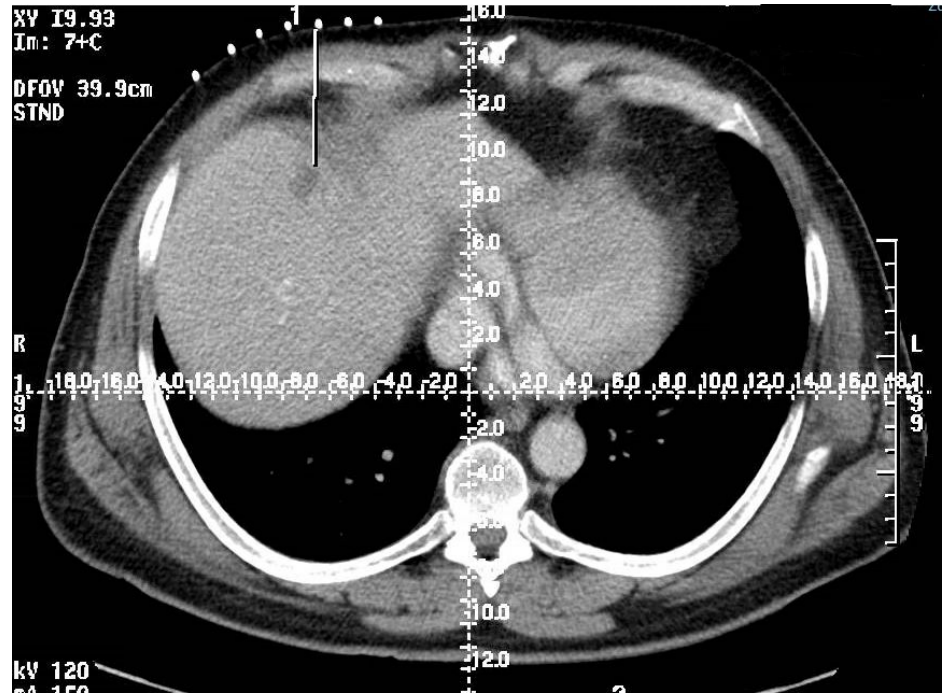
US guided evaluation showed no sonographic correlate to the MRI focus that was concerning for residual/recurrent disease adjacent to the previous ablated segment 4A melanoma metastasis. No biopsy was performed.



## And our alternate plan

After discussion, the decision was made to perform the procedure under CT guidance.

While technically challenging, we managed to successfully obtain a CT guided liver lesion biopsy, with 4 core samples and 1 FNA sent for analysis.





# Creating a pathology correlate

The aspirated material was expelled onto a glass slide using a syringe and smeared. Then the sample was rapidly fixed and stained.

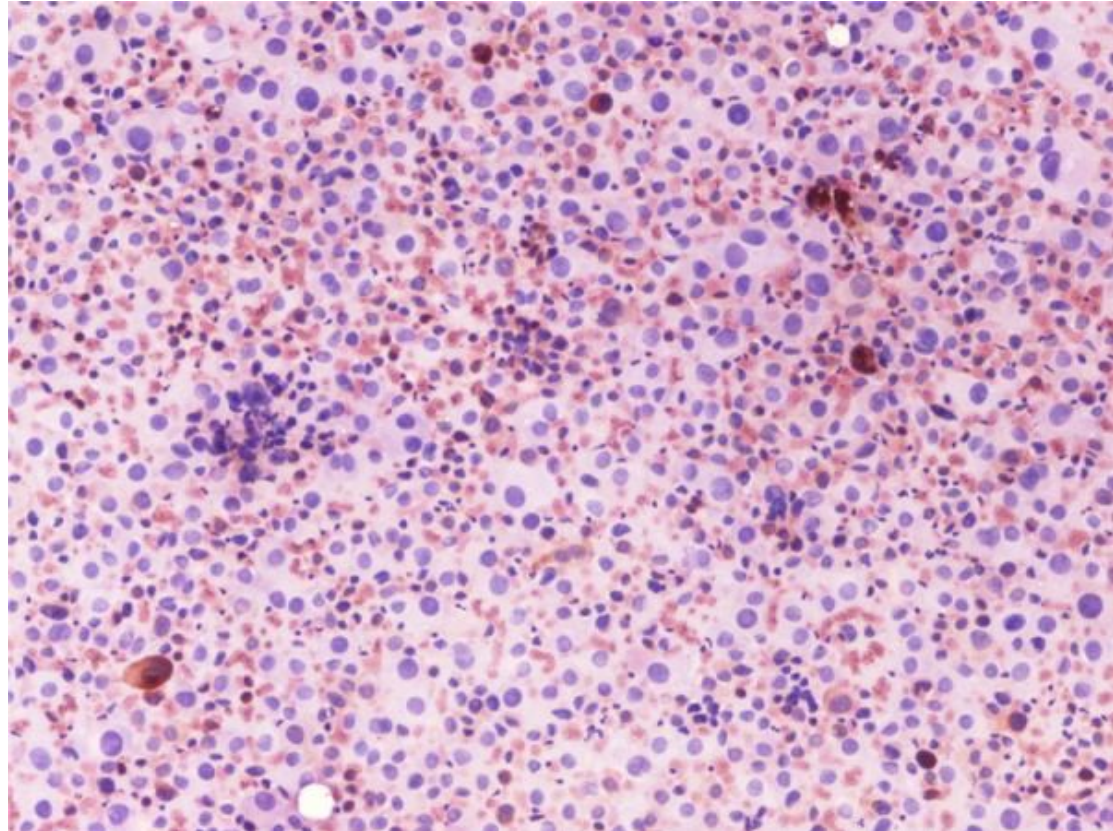
Malignant melanoma is typically associated with certain histological features including:

- High cell-yield
- Loosely associated pleomorphic cells
- Presence of melanin pigment
- Inclusion-like nucleoli
- Intranuclear cytoplasmic inclusions
- Expression of melanoma markers (**S100**, BRAF, HMB-45, Melan-A, tyrosinase, MITF, vimentin)



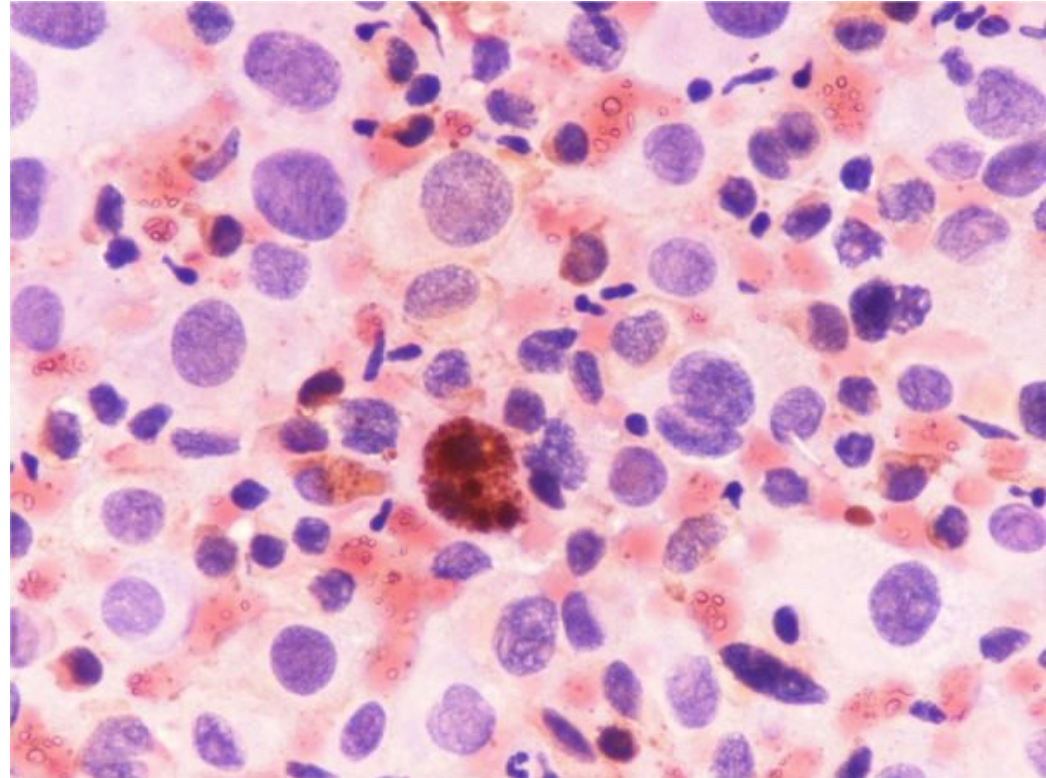


**Loosely cohesive smear pattern.**

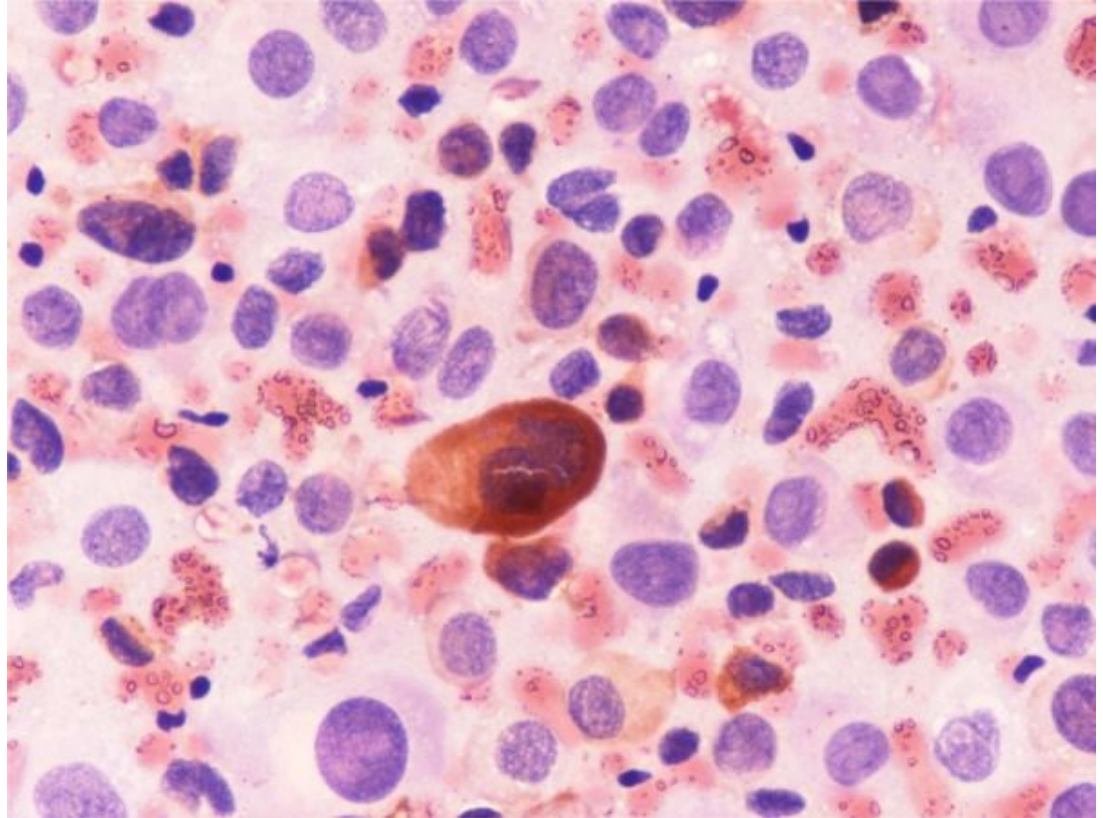




**Large eccentric nuclei,  
prominent nucleoli,  
occasional binucleate  
forms and focal  
intracytoplasmic brown  
melanin pigment.**



  
**Melanin pigment in a  
binucleate tumor cell**





## Our pathology results

“The FNA smears show abundant single atypical cells, some showing pigment. The core biopsy shows normal liver parenchyma with solid areas of tumor proliferation. S100 immunostain was performed and was positive, confirming the diagnosis. Immunostain for BRAF is POSITIVE.”



## Course complicated

The procedure was complicated by right-sided pneumothorax that developed after CT-guided liver biopsy.

8.5 Fr drainage catheter was placed into right pleural space and post-procedure images showed resolution of pneumothorax.

He was admitted to hospital overnight for further observation. He was discharged the following day, following chest tube removal and evidence of pneumothorax resolution on repeat imaging.



Present a Radiologic-Pathologic case of

- Patient's clinical presentation
- Relevant imaging
- Procedure performed
- Relevant issues with it (why US instead of CT, or core and FNA because needed for accurate path)
- What made the pathology a lymphoma, or lung cancer - specific type of nuclei, stains, type of treatment, and prognosis, etc.

Work to make the presentation full circle with the idea of longitudinal learning.

This will be presented at the end of the rotation, in PowerPoint format, to elective director or assigned faculty/trainee. Have fun creating your presentation; learn and enjoy the case, whatever you feel relevant that will enhance the learning experience is welcome!



# References

Alam, Kiran et al. "FNA diagnosis of malignant melanoma-recurrent and metastatic disease." *BMJ case reports* (2012): doi:10.1136/bcr-2012-006887

Doubrovsky, Anna et al. "Diagnostic accuracy of fine needle biopsy for metastatic melanoma and its implications for patient management." *Annals of surgical oncology* vol. 15,1 (2008): 323-32. doi:10.1245/s10434-006-9341-0

Lindsey, Kathryn et al. "Cytological diagnosis of metastatic malignant melanoma by fine-needle aspiration biopsy." *Seminars in Diagnostic Pathology* vol 33, 4 (2016): 198-203. doi.org/10.1053/j.semdp.2016.04.004

