



Case #115

NAME Educational Activities Committee

Case provided by:

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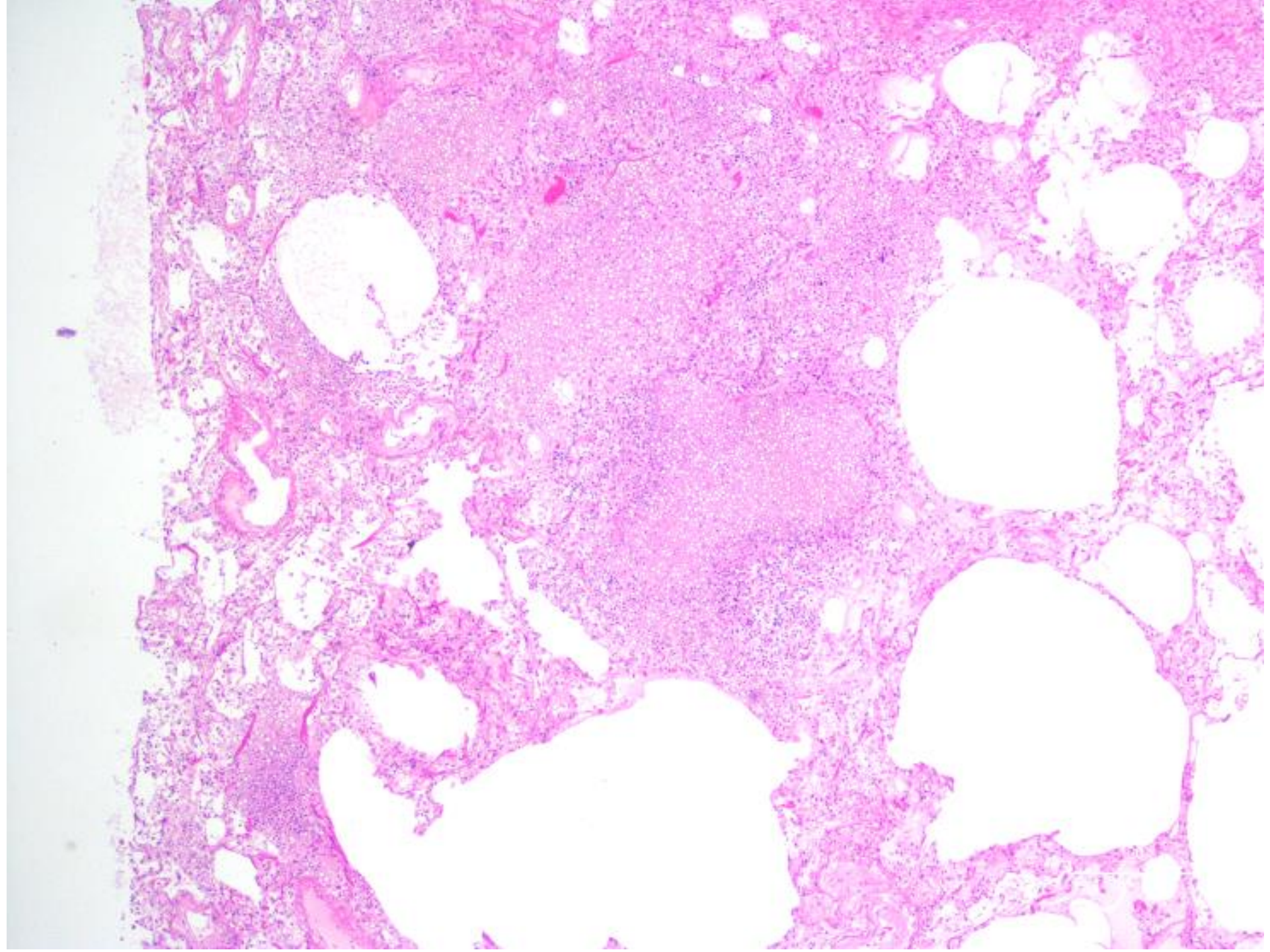
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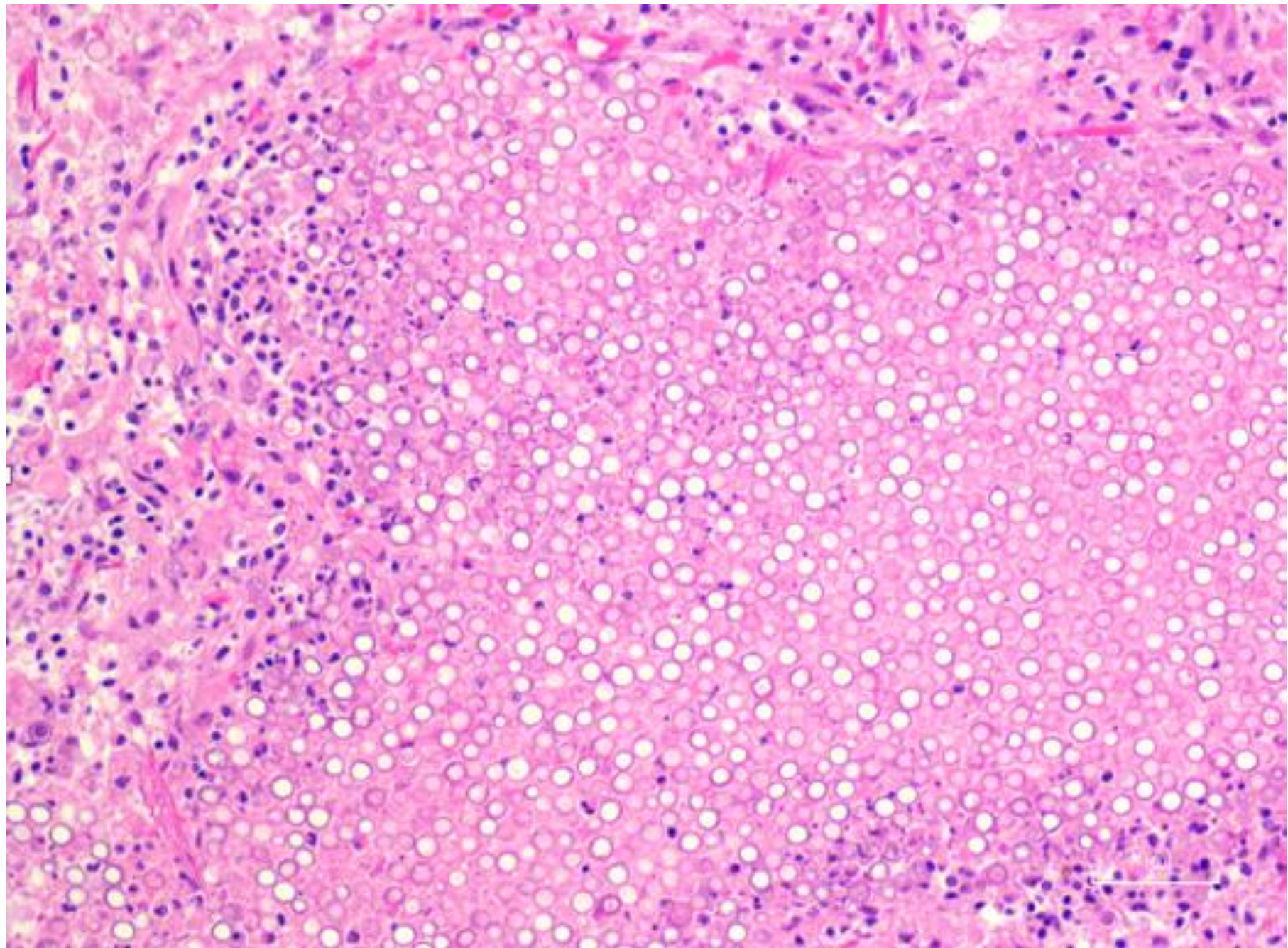
Cook County Medical Examiner's Office

1. A male was found unresponsive following a probable fall. On external examination, no evidence of severe trauma was observed. Histologic sections taken during internal examination revealed the microscopic findings shown in the photos.

The subject most likely:

- Had a history of chronic ethanolism
- Was in the late stage of Human Immunodeficiency Virus infection
- Had a recent liposuction procedure
- Was a construction worker in the in the American Midwest





Answer...

D. Was a construction worker in the in the American Midwest

(CORRECT ANSWER, 25.05% of responses)

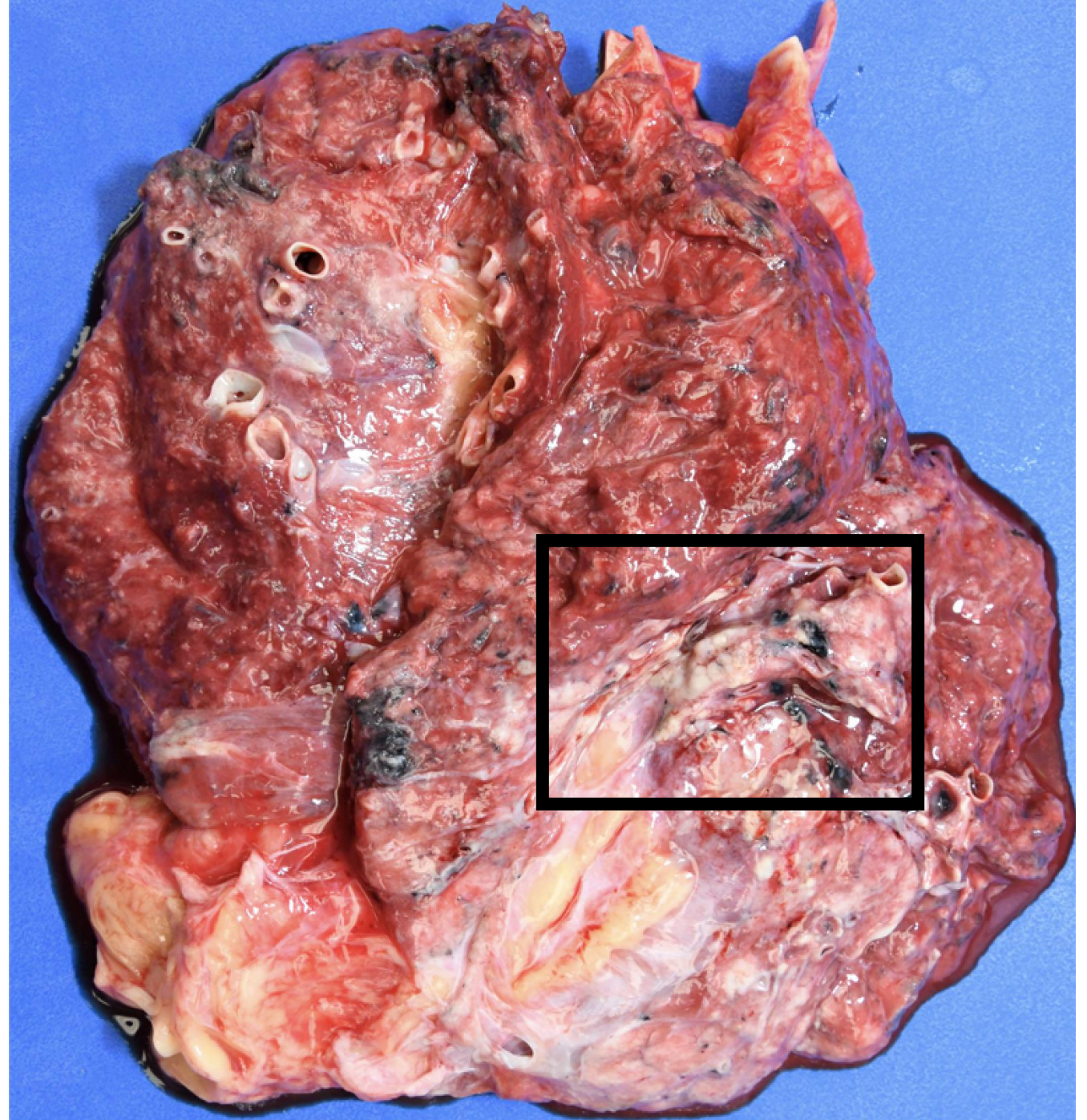
Microscopic findings are consistent with acute pneumonia due to a **Blastomyces** infection.

Blastomyces is a dimorphic fungus causing blastomycosis, primarily affecting the lungs with potential dissemination. Endemic in North America, it thrives in moist, organic-rich soil. Construction workers are at increased risk due to frequent exposure to disturbed soil and aerosolized spores. Infection does not require an immunocompromised state.

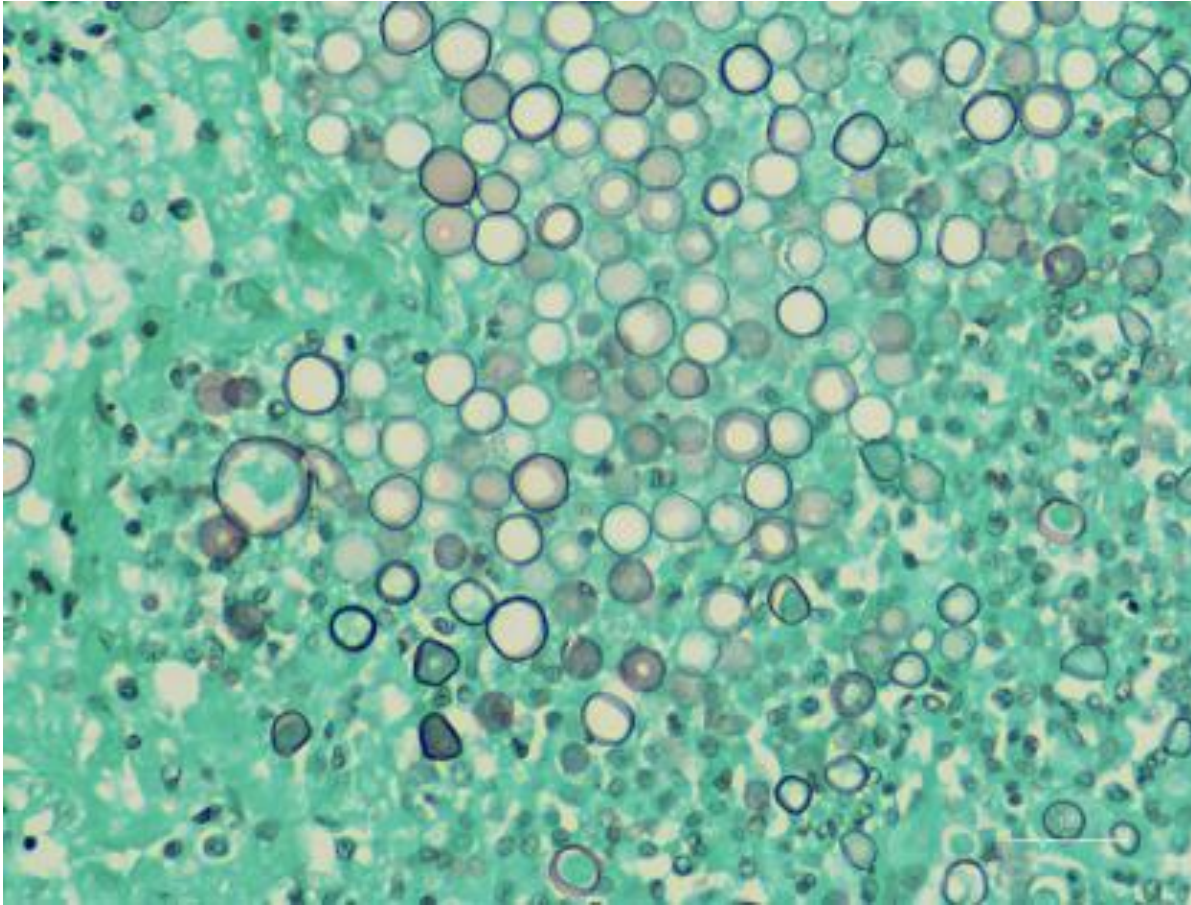
Histological examination of H&E-stained sections reveals uniformly sized, refractile, round yeast cells, sometimes containing internal material that may be lost during tissue processing. Special stains, including PAS and GMS, effectively highlight the organisms, while mucicarmine staining is weakly positive, contrasting with the strong positivity observed in Cryptococcus.

Other fungi in the differential diagnosis include histoplasmosis (much smaller yeast and intracellular), Coccidioides (larger spherules containing numerous endospores), and cryptococcus (more variable in size).

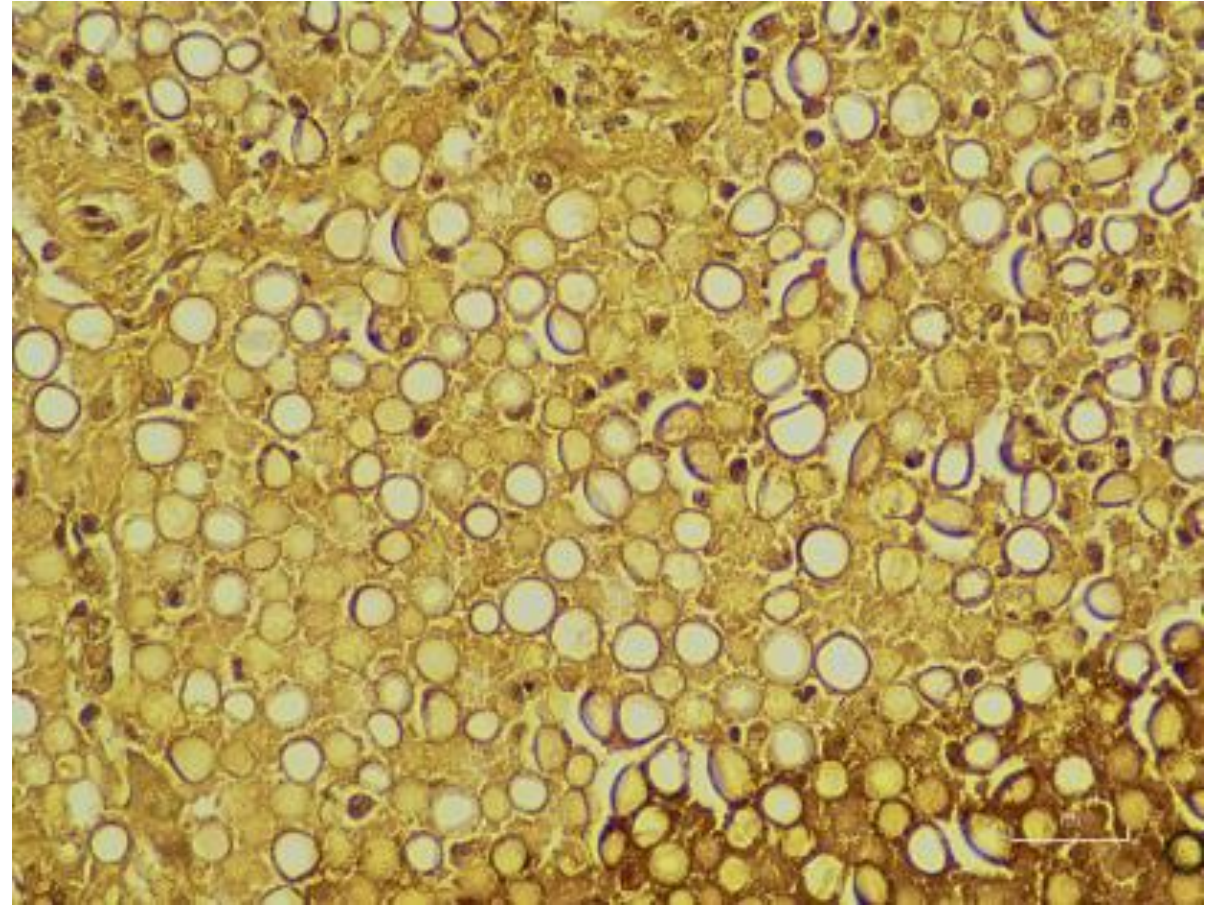
Blastomycosis
pneumonia: gross



Blastomycosis: additional stains

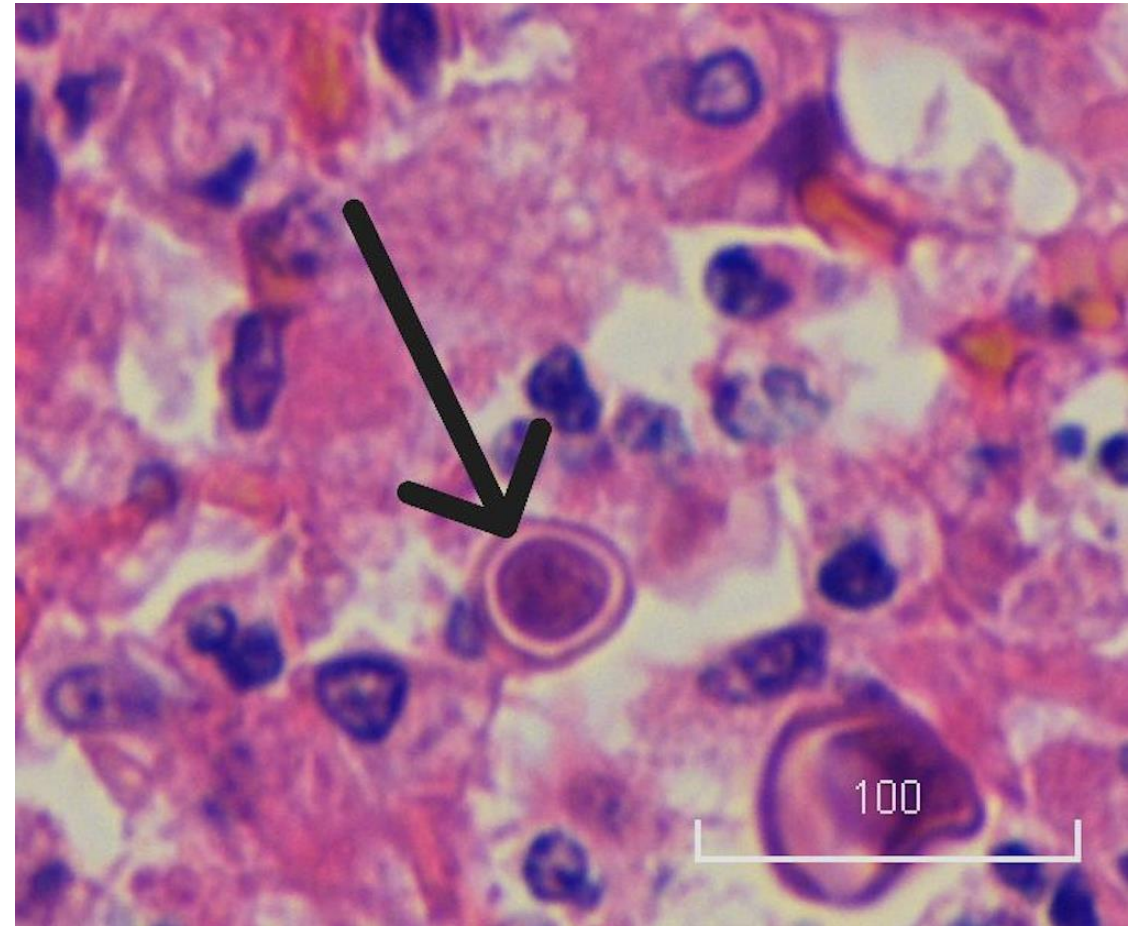
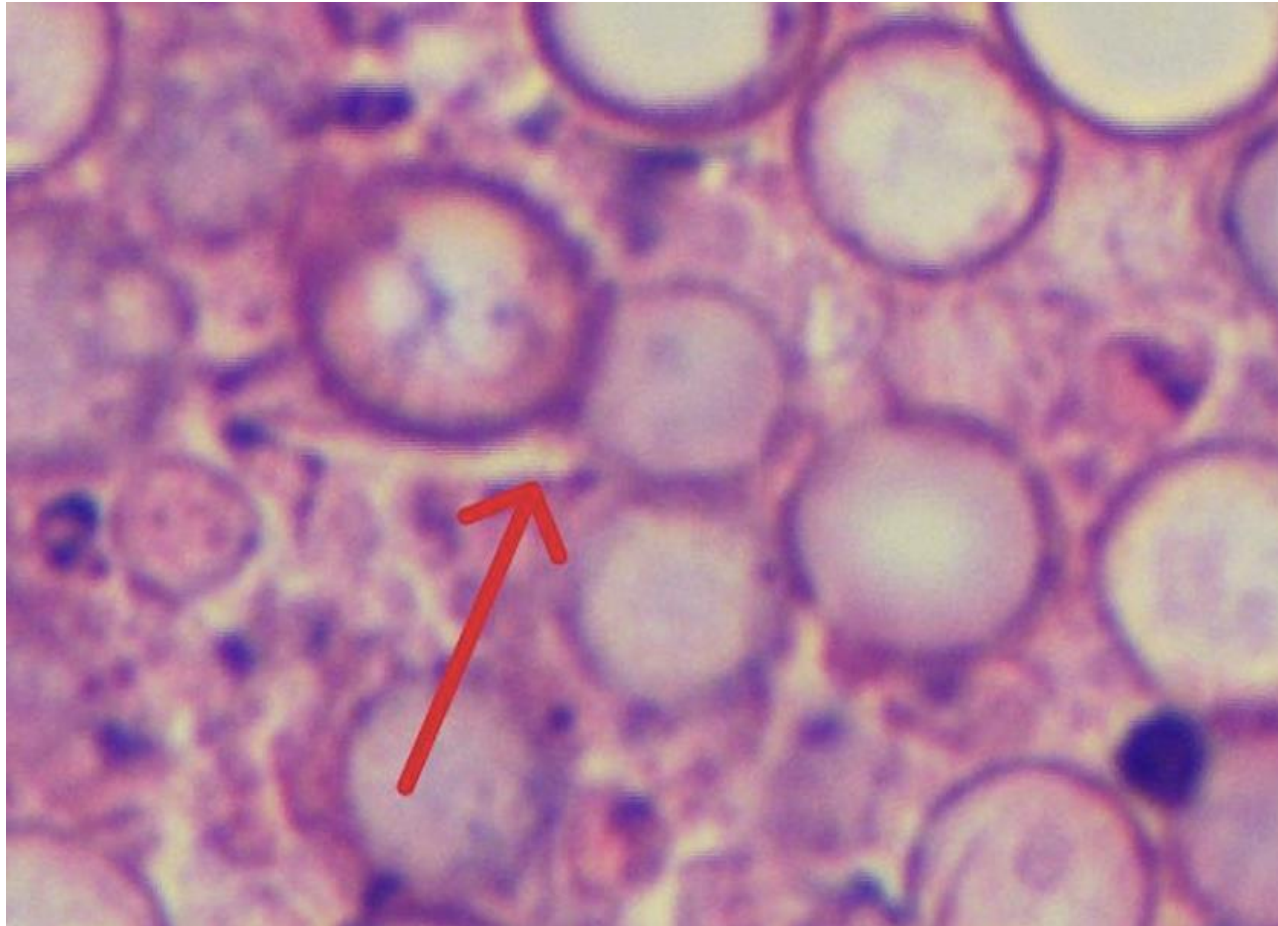


GMS



Mucicarmine

Blastomycosis: Details of round yeast cells with internal material (black arrow) and broad-based budding (red arrow)



Other Answers...

A. Had a history of chronic ethanolism
(17.01% of responses)

Chronic ethanol use leads to hepatic steatosis ('fatty liver'), a condition characterized by diffuse yellow discoloration of the liver parenchyma and microscopic evidence of macrovesicular steatosis (large cytoplasmic lipid vacuoles displacing the nucleus peripherally) or microvesicular steatosis (fine vacuolization, imparting a foamy appearance). The provided microscopic photos are from sections of lung tissue.

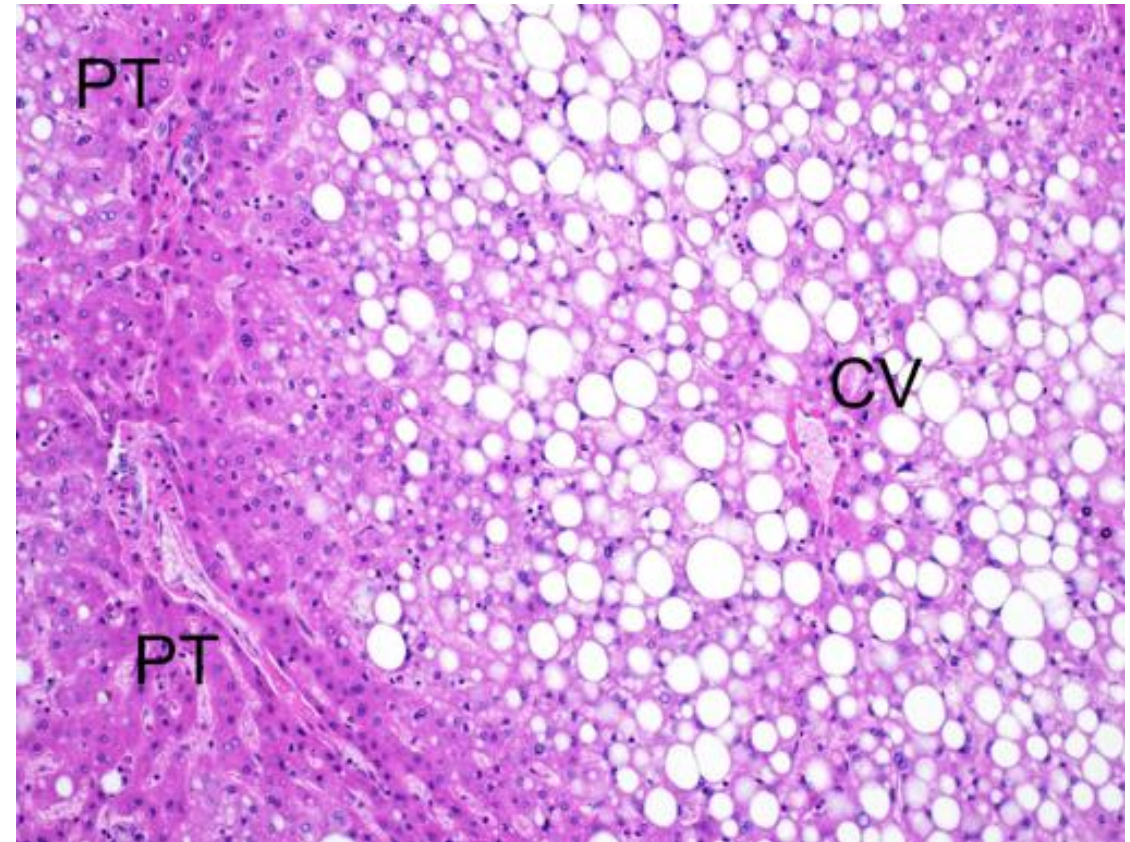


Photo source: [pathologyoutlines.com](https://www.pathologyoutlines.com)
<https://www.pathologyoutlines.com/topic/livernash.html>

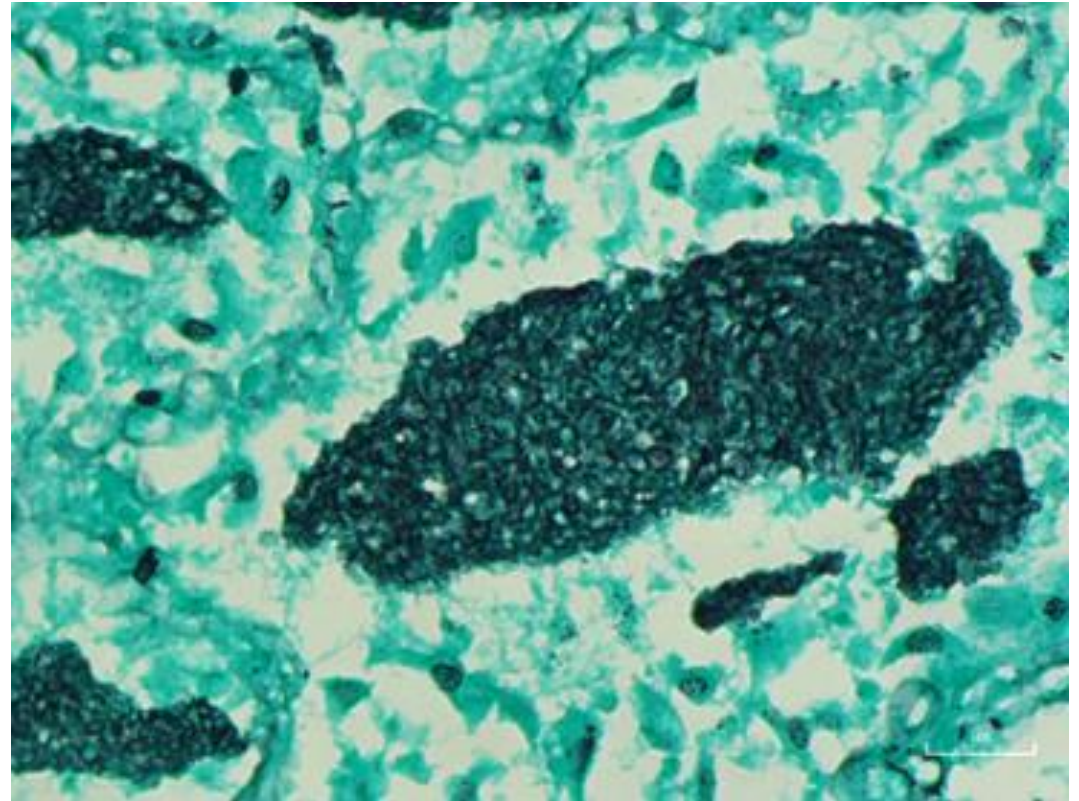
B. Was in the late stage of Human Immunodeficiency Virus infection
(33.08% of responses)

AIDS is the late stage of HIV infection, and is characterized by increased risk of opportunistic infections, including pneumocystis jirovecii.

Microscopically, pneumocystis jirovecii shows foamy, frothy exudate that fills the alveoli, composed of a mixture of cellular debris, inflammatory cells, and fungal organisms.

The characteristic fungal organisms can be highlighted using special stains such as Gomori methenamine silver (GMS), which reveals the cyst walls, and Periodic acid-Schiff (PAS), which stains the cysts and trophozoites.

Blastomycosis does not require an immunocompromised state.



*Pneumocystis jirovecii pneumonia – GMS stain
Contributed by Bartłomiej 'Bart' Radzik, MD
Cook County Medical Examiner's Office*

C. Had a recent liposuction procedure
(24.86% of responses)

Fat embolism syndrome can occur as a rare but serious complication following liposuction. During the procedure, large volumes of fat are removed, which can cause fat globules to enter the venous circulation. These globules may then pass through the right side of the heart into the pulmonary circulation, leading to pulmonary fat embolism. In severe cases, fat globules can also embolize to the brain, kidneys, skin, and other organs.

Microscopically, small, round, and refractile fat droplets are found in the capillaries and small vessels of the lungs and other organs. These globules can be visualized using special stains, such as Sudan III or Oil Red O, which highlight lipid content. When suspected, a frozen section of fresh lung tissue stained with Oil Red O may yield positive results.

In the provided photos, the findings are intraalveolar and not intravascular.

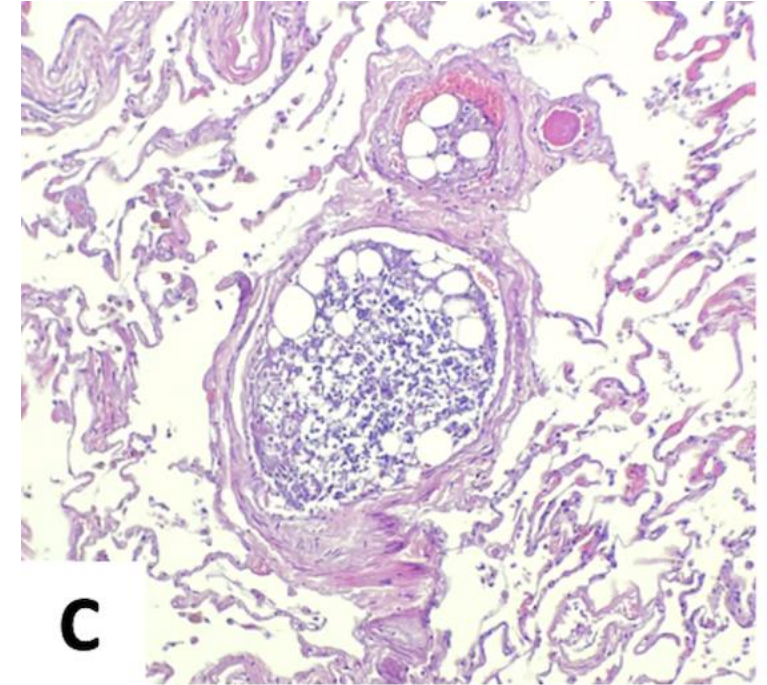


Photo source:
<https://pmc.ncbi.nlm.nih.gov/articles/PMC9373754/>

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