NYU Long Island School of Medicine

DEPARTMENT OF PATHOLOGY

Short Report in Pathology

Organ system: Breast

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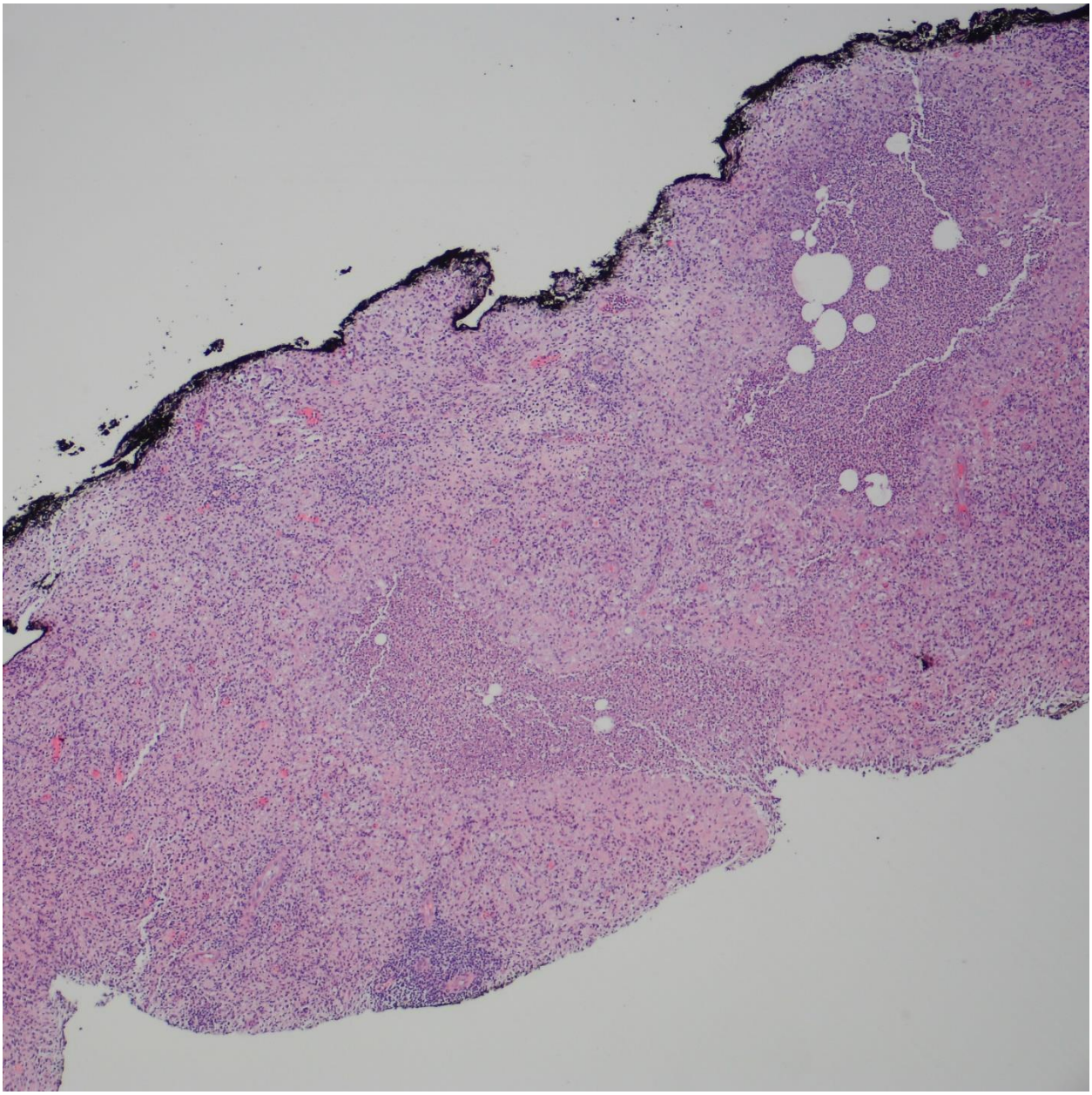
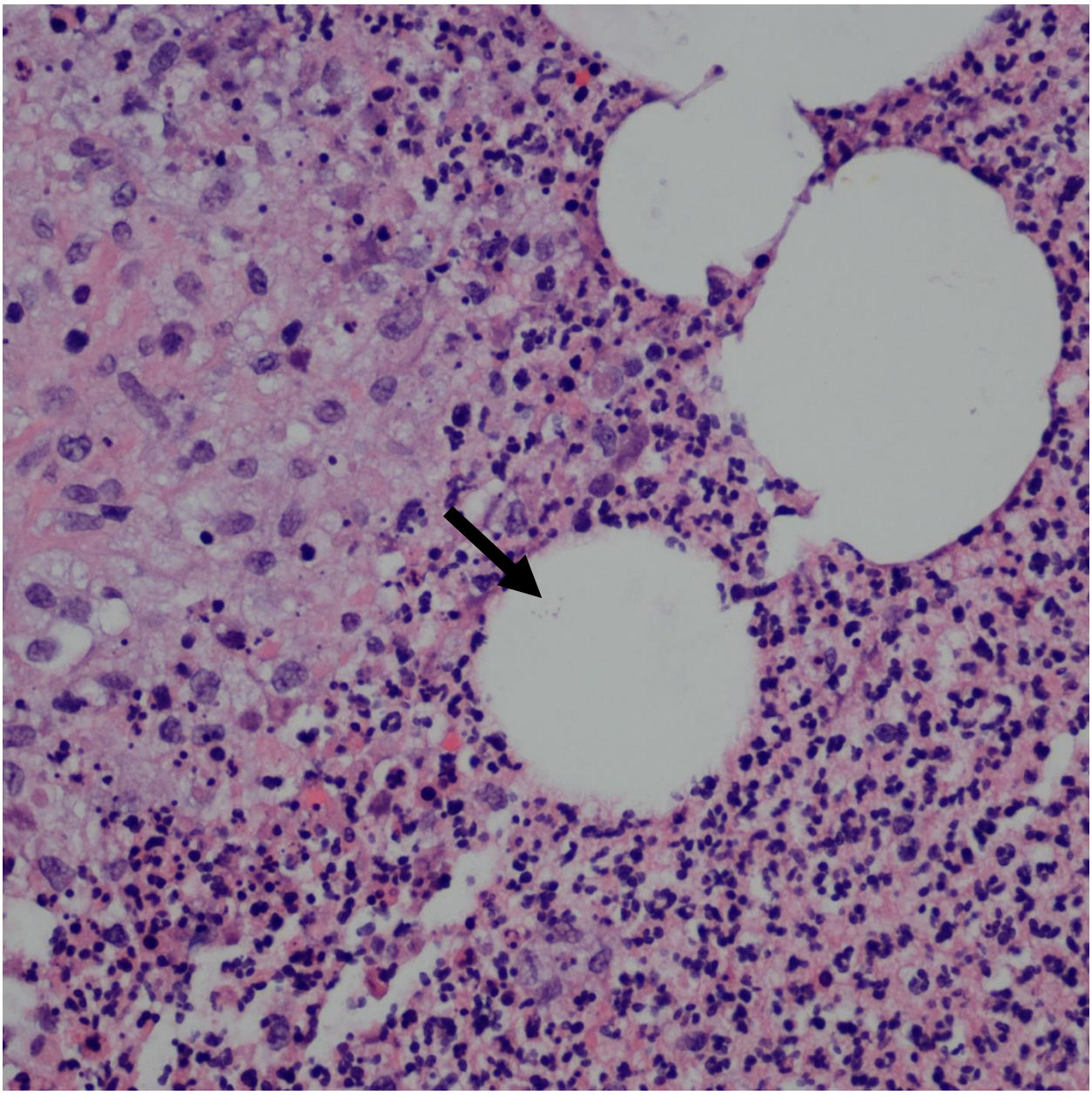
History:

A 43-year-old woman presents with a palpable mass in her right breast. A diagnostic mammogram reveals a multinodular asymmetry in the anterior central region, corresponding to the palpable finding. An ultrasound further identifies a 3.9 cm irregular heterogeneous mass in the same area. A core biopsy of the mass was recommended.

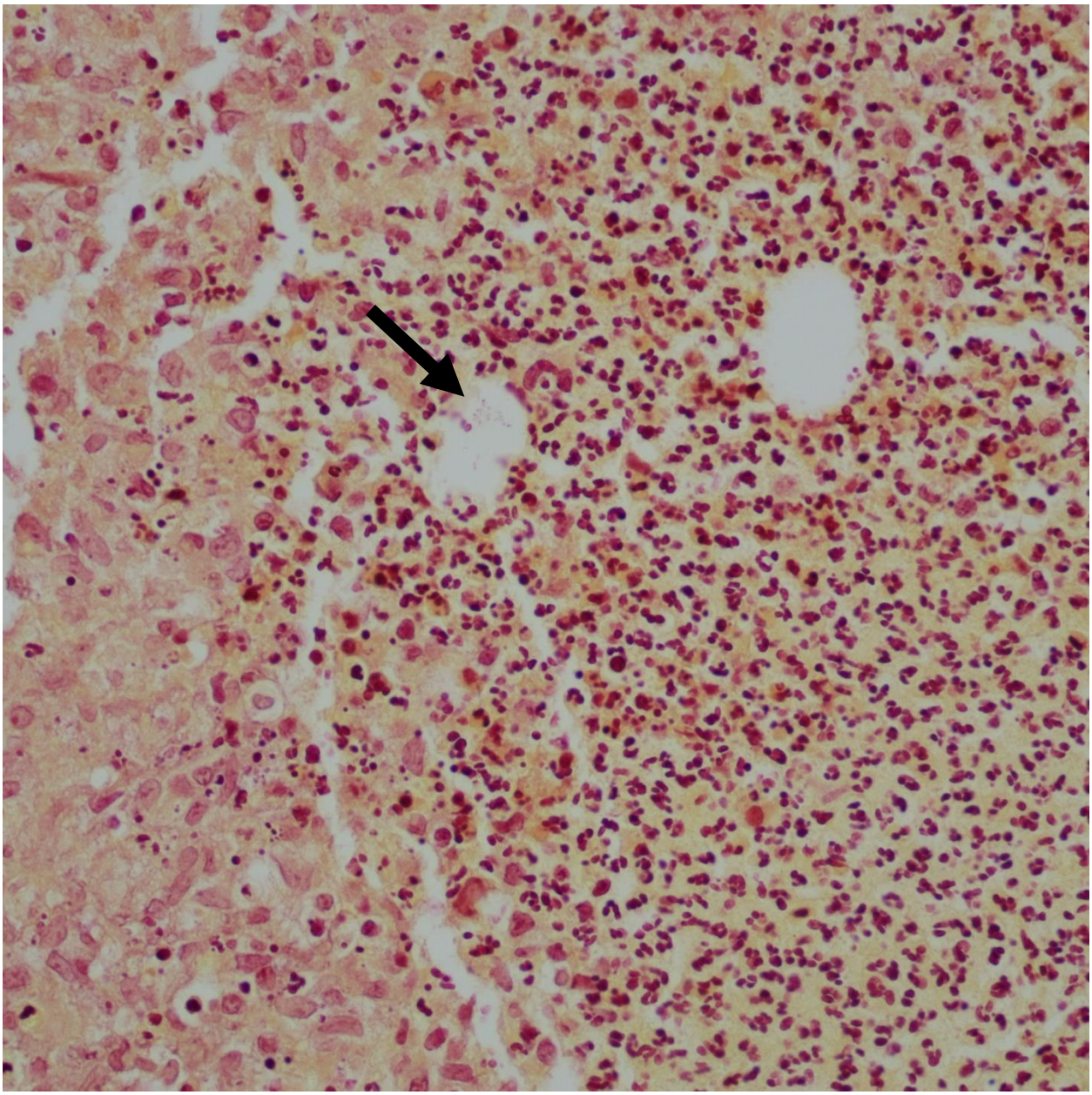
Microscopic Images:



Effacement of normal breast glandular architecture by granulomatous inflammation with central aggregates of neutrophil-predominant inflammation (H&E, 10X)



Structures suspicious for bacterial forms identified within neutrophil-lined cystic spaces (arrow). (H&E, 100X)



A Gram Stain highlights rod-shaped gram-positive bacilli in the cystic space (arrow). (H&E, 100X)

Special Stains:

Gram Stain positive (may be focal or negative)

AFB and GMS stains are negative

Diagnosis:

Cystic Neutrophilic Granulomatous Mastitis (CNGM).

Differential diagnoses:

1. Idiopathic granulomatous mastitis
2. Granulomatous mycobacterial, fungal, or parasitic infections
3. Sarcoidosis
4. Granulomatous reaction in autoimmune diseases
4. Reaction to foreign material

Discussion:

Cystic neutrophilic granulomatous mastitis (CNGM) is a rare subtype of granulomatous mastitis and has overlapping clinical and histologic features with idiopathic granulomatous mastitis. Both entities may show lobulocentric granulomas with associated neutrophils; however, CNGM is distinguished by the presence of small cystic spaces surrounded by the neutrophils and in some cases may show sparse gram-positive bacteria within the spaces, typically *Corynebacterium* species. The vacuolated cystic spaces are thought to be composed of dissolved lipid. The most commonly isolated species are *C. kroppnstedtii,* followed by *C. amycolatum* and *C. tuberculostearicum*. Coryneform bacteria, also known as “diptheroids”, are an aerobic bacteria commonly found as normal skin flora and have been increasingly implicated in human infections. Clinically, the radiologic and physical exam findings in cases of CNGM are often concerning for malignancy due to the mass-forming nature of this entity. CNGM is often unilateral and is most often seen in young women ~35 years old. Treatment includes *Corynebacterium*-directed antibiotic therapy with options for surgery and steroids in refractory cases.

Review Questions:

Which of the following is **false** regarding cystic neutrophilic granulomatous mastitis (CNGM)?

A. CNGM is often unilateral and is most often seen in women ~35 years of age
B. The most commonly isolated species is *Corynebacterium diptheriae*
C. CNGM is characterized by small cystic spaces surrounded by neutrophils which may or may not show gram-positive bacteria within the spaces
D. CNGM and idiopathic granulomatous mastitis have many overlapping clinical and histologic features

Answer: B

References:

1. Wu JM, Turashvili GCystic neutrophilic granulomatous mastitis: an update. Journal of Clinical Pathology 2020;73:445-453.

2. Paviour S, Musaad S, Roberts S, et al. Corynebacterium species isolated from patients with mastitis. Clin Infect Dis 2002;35:1434–40.