



Something in the water?

DR. PATRICK RUSH, DO

Clinical Presentation

26yo Female

- “Erythematous lichenified papules clustered onto plaques within tattoo”



Clinical Presentation

26yo Female

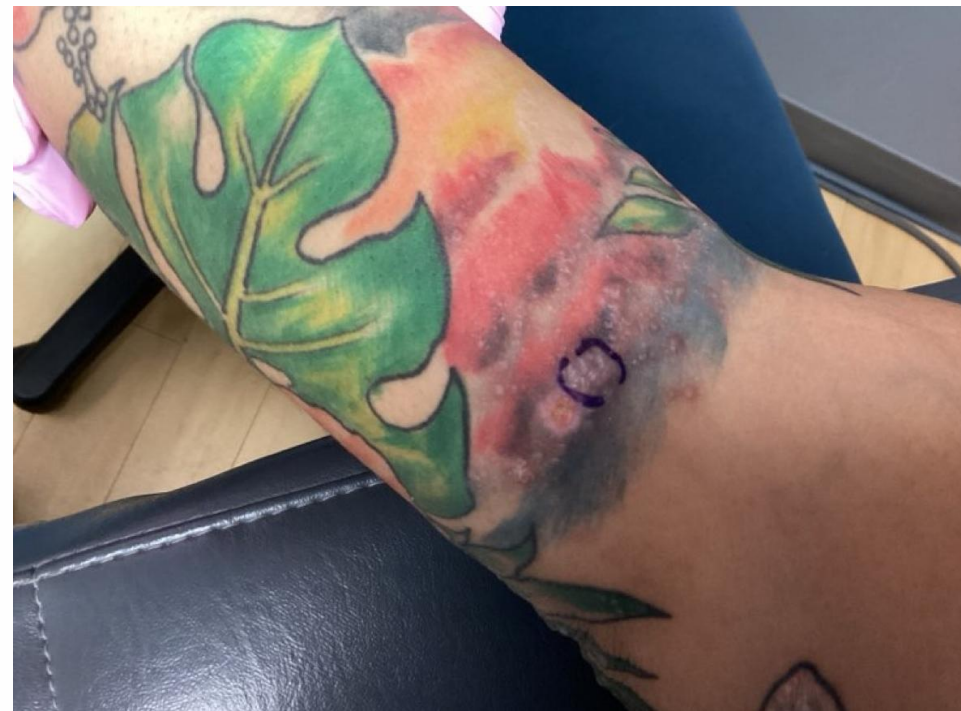
- “Erythematous lichenified papules clustered onto plaques within tattoo”
- Pt noticed the rash “very soon” after getting the tattoo, and it felt “irritated and painful”
- Tattoo was performed 3 months before these photos

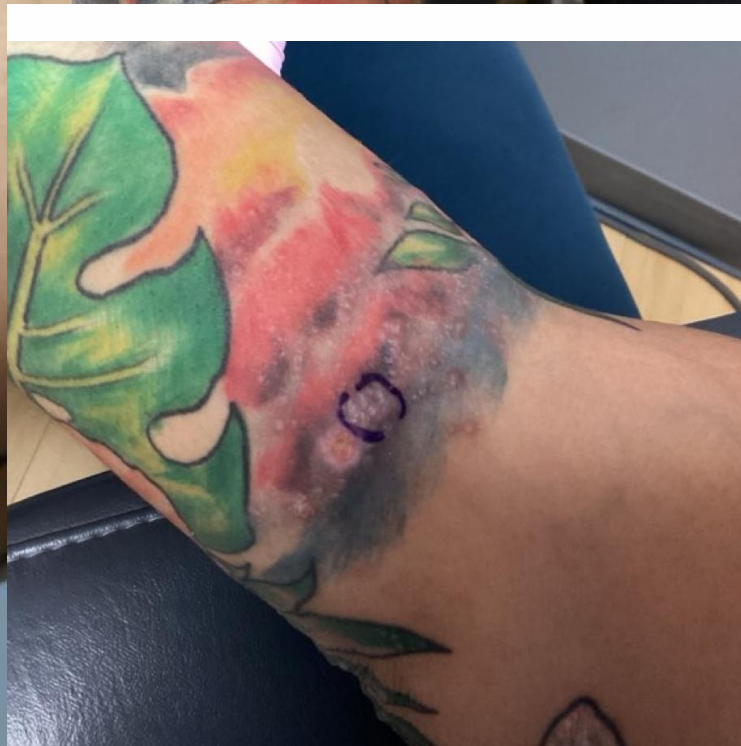
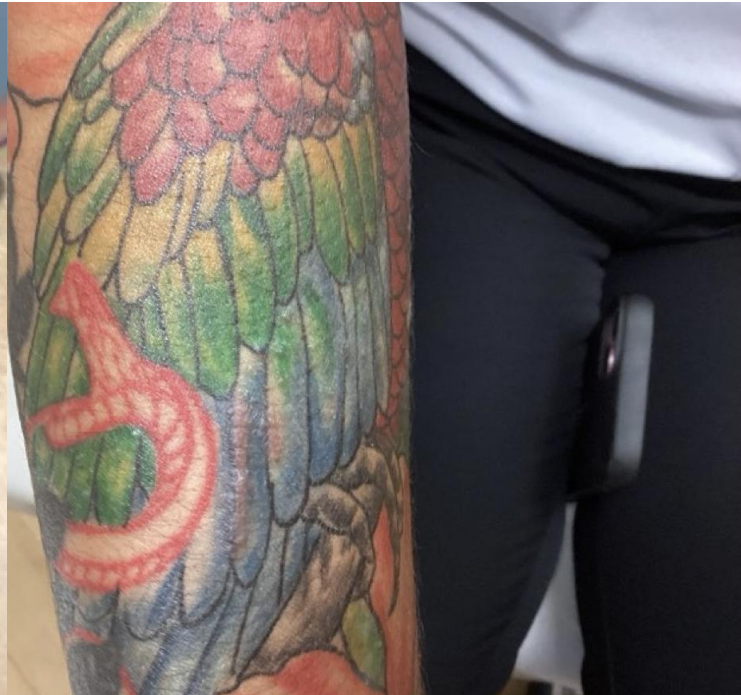


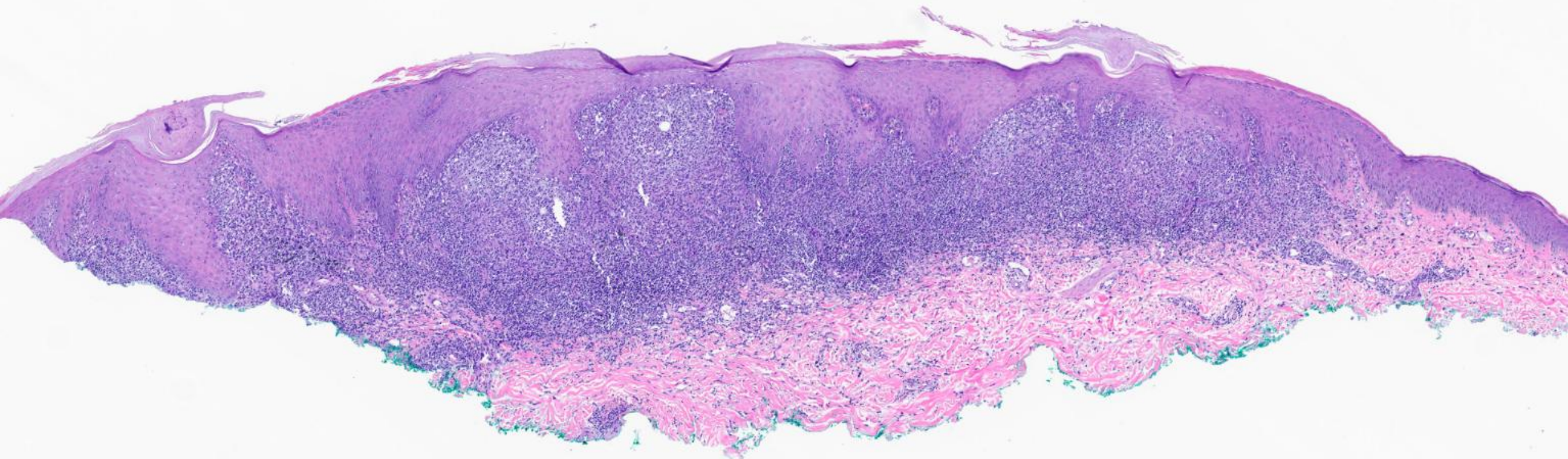
Clinical Presentation

26yo Female

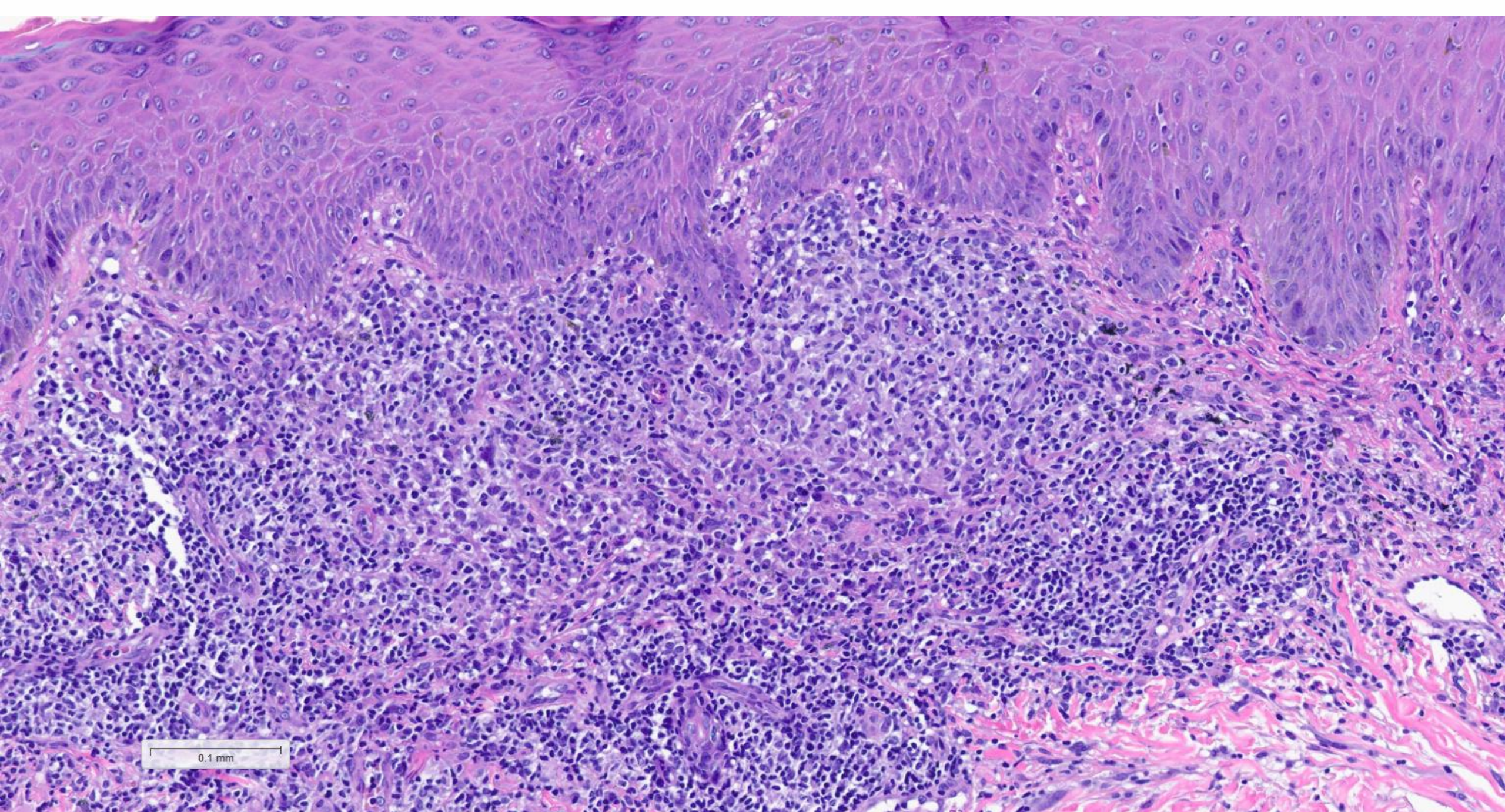
- “Erythematous lichenified papules clustered onto plaques within tattoo”
- Pt noticed the rash “very soon” after getting the tattoo, and felt “irritated and painful”
- Tattoo was performed 3 months before these photos
- DDX: “Tattoo reaction vs tattoo associated sarcoidosis.”



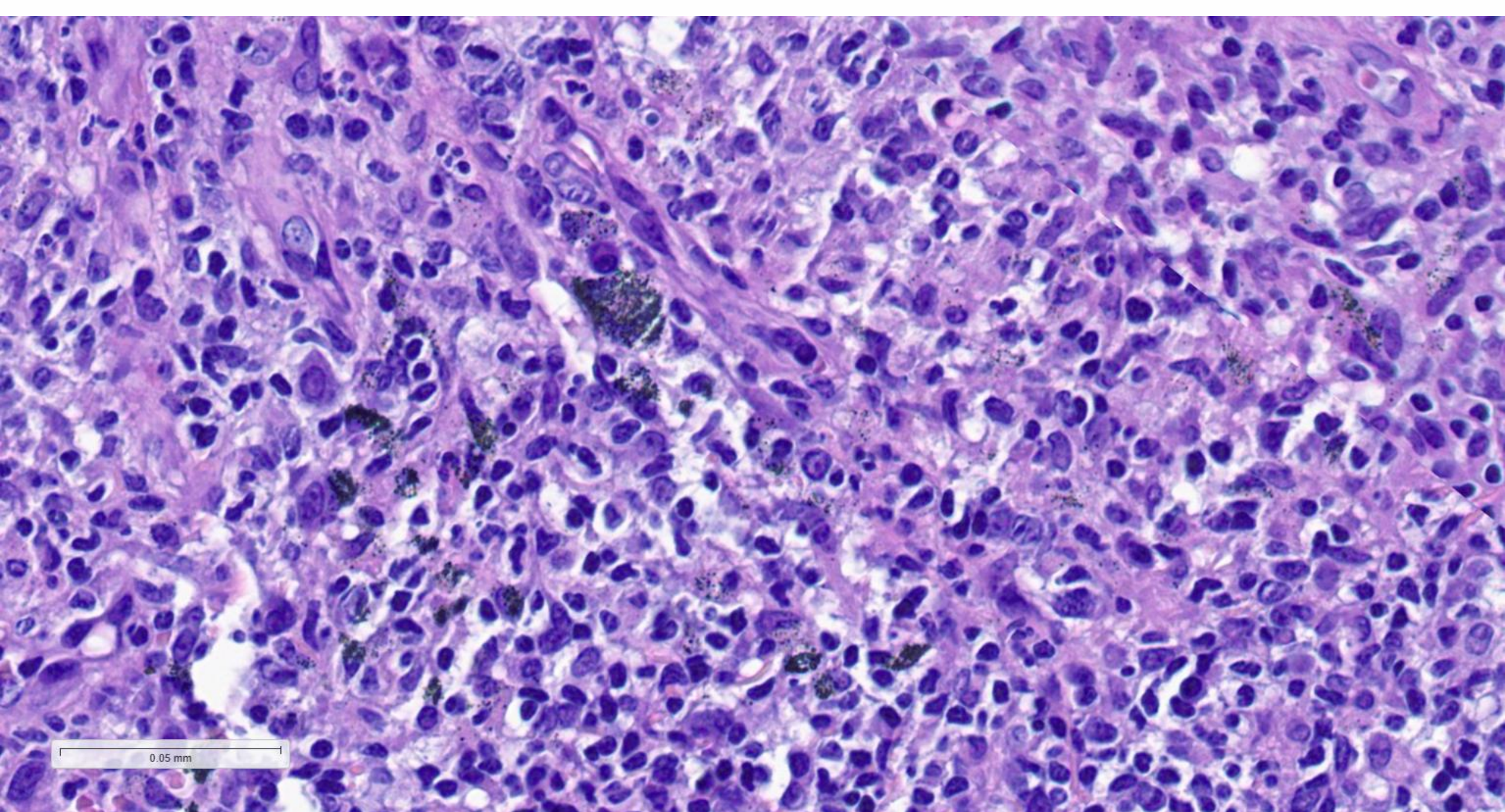


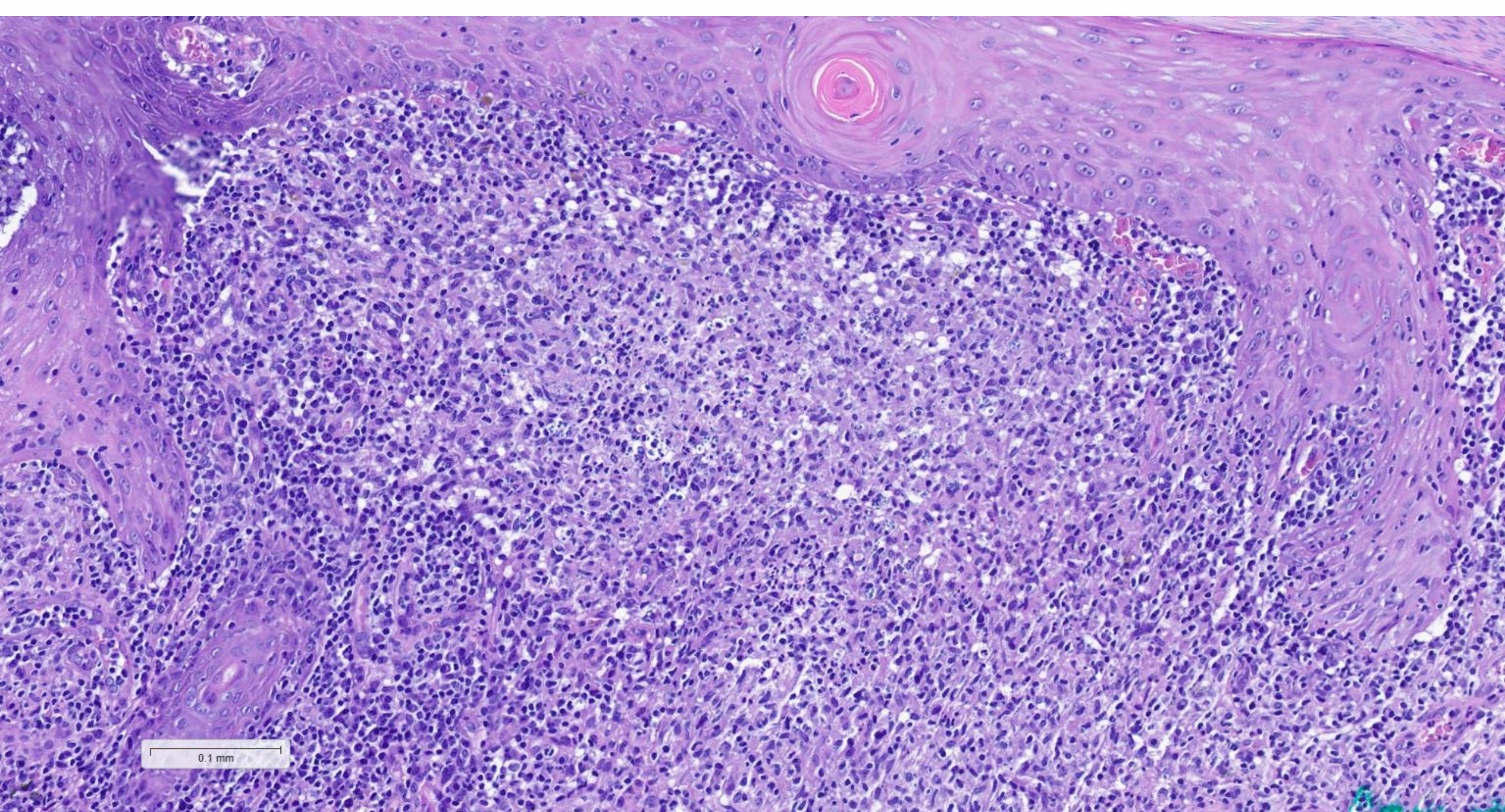


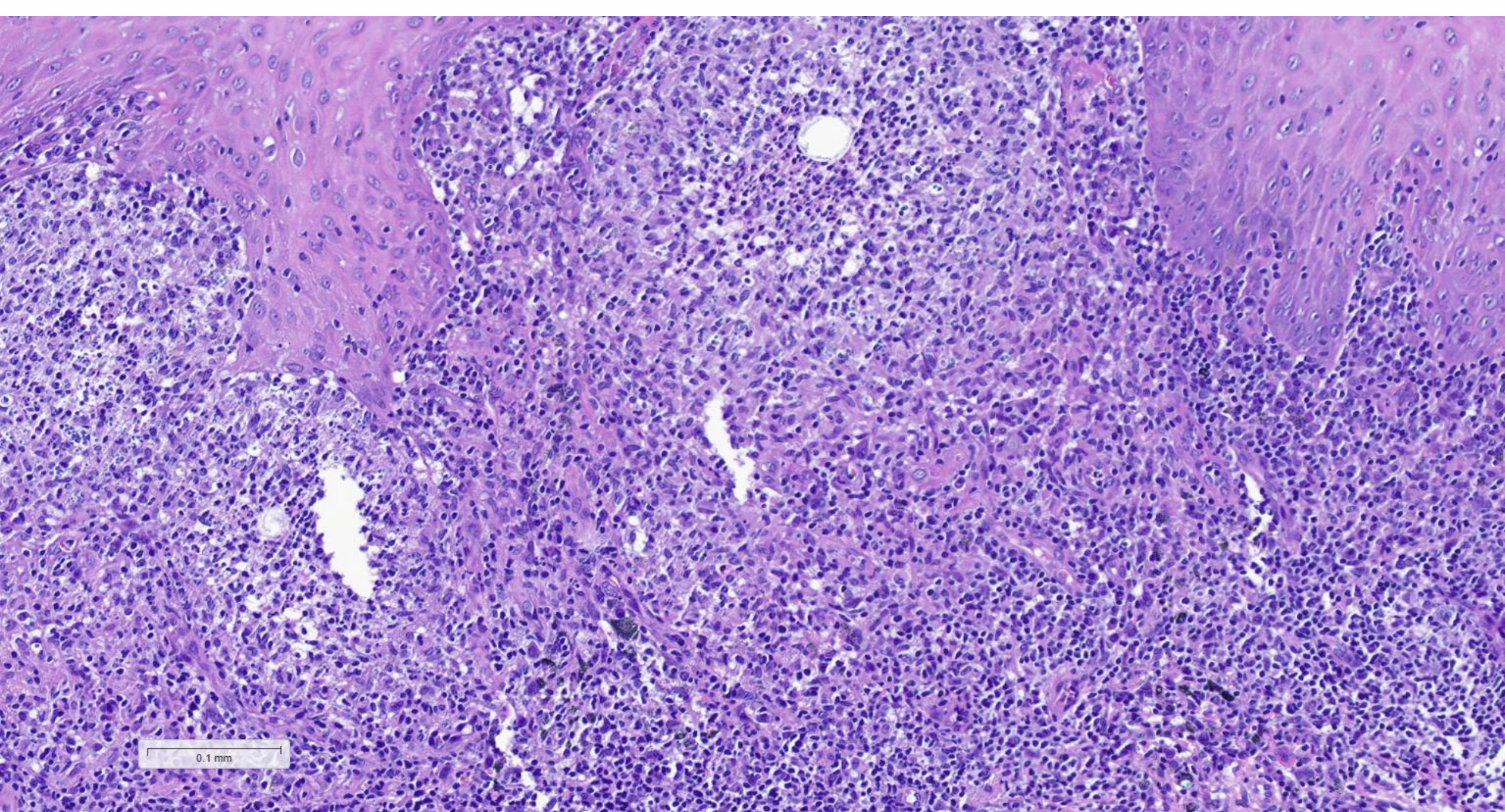
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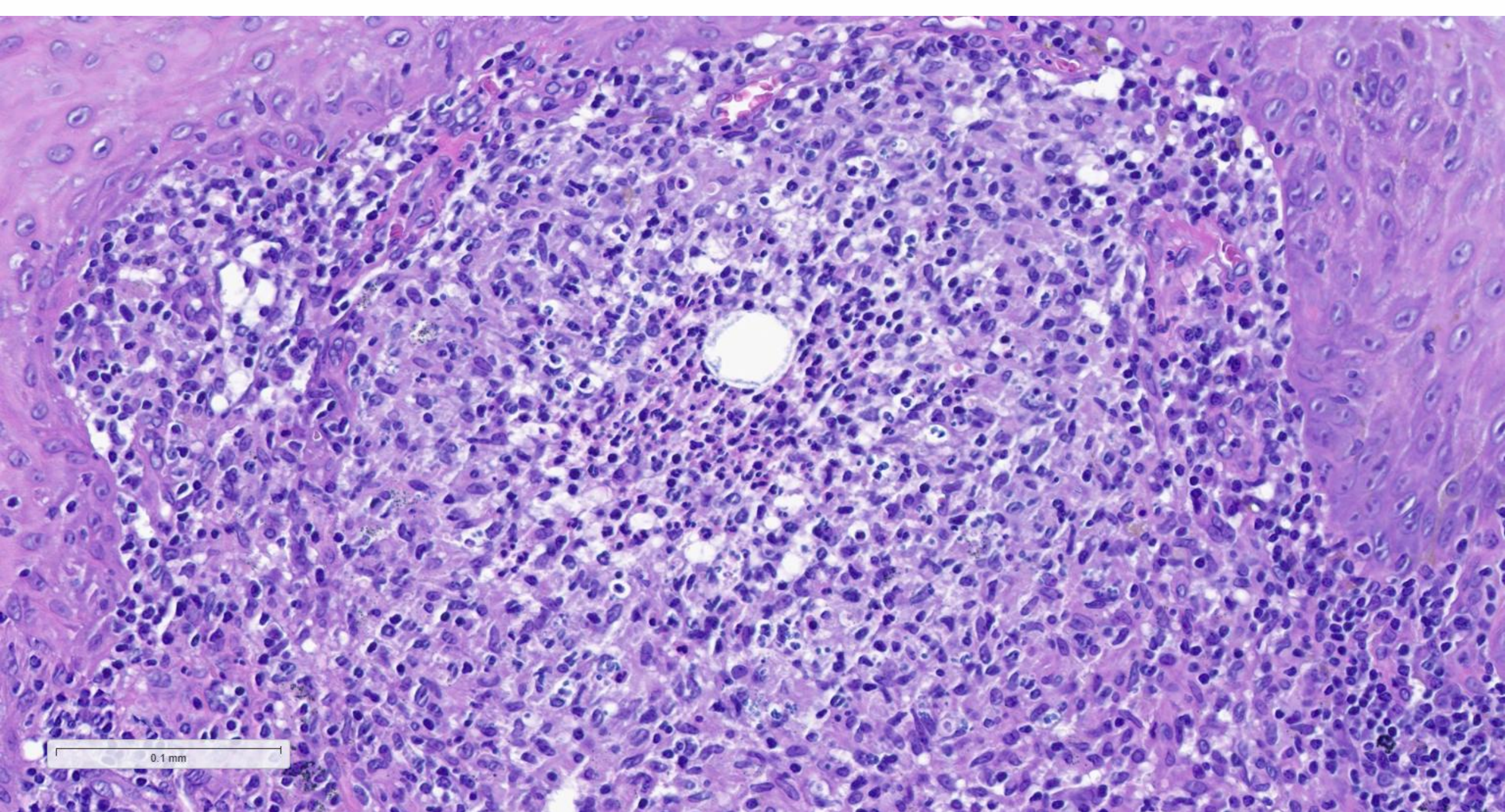
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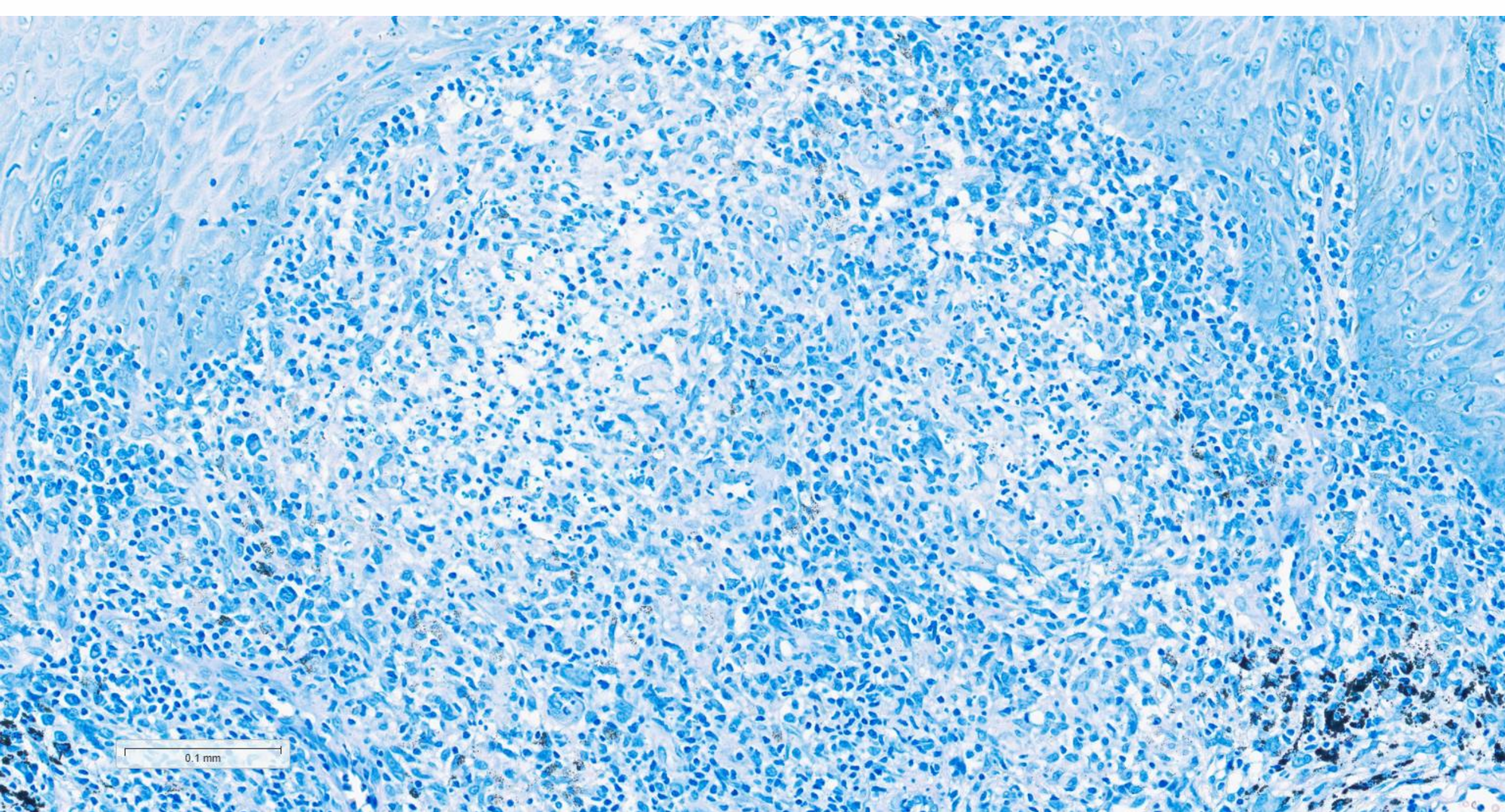


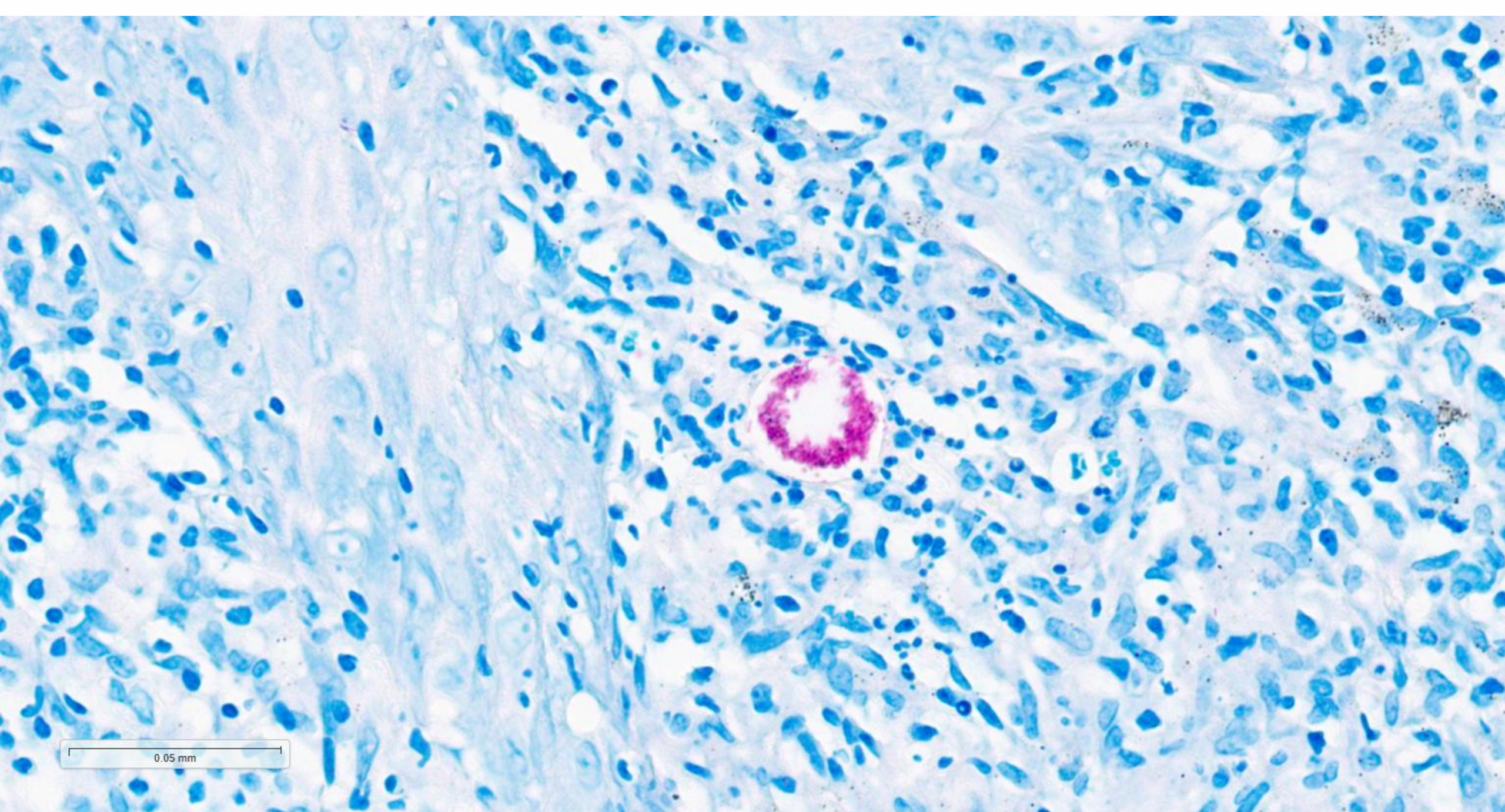


0.1 mm

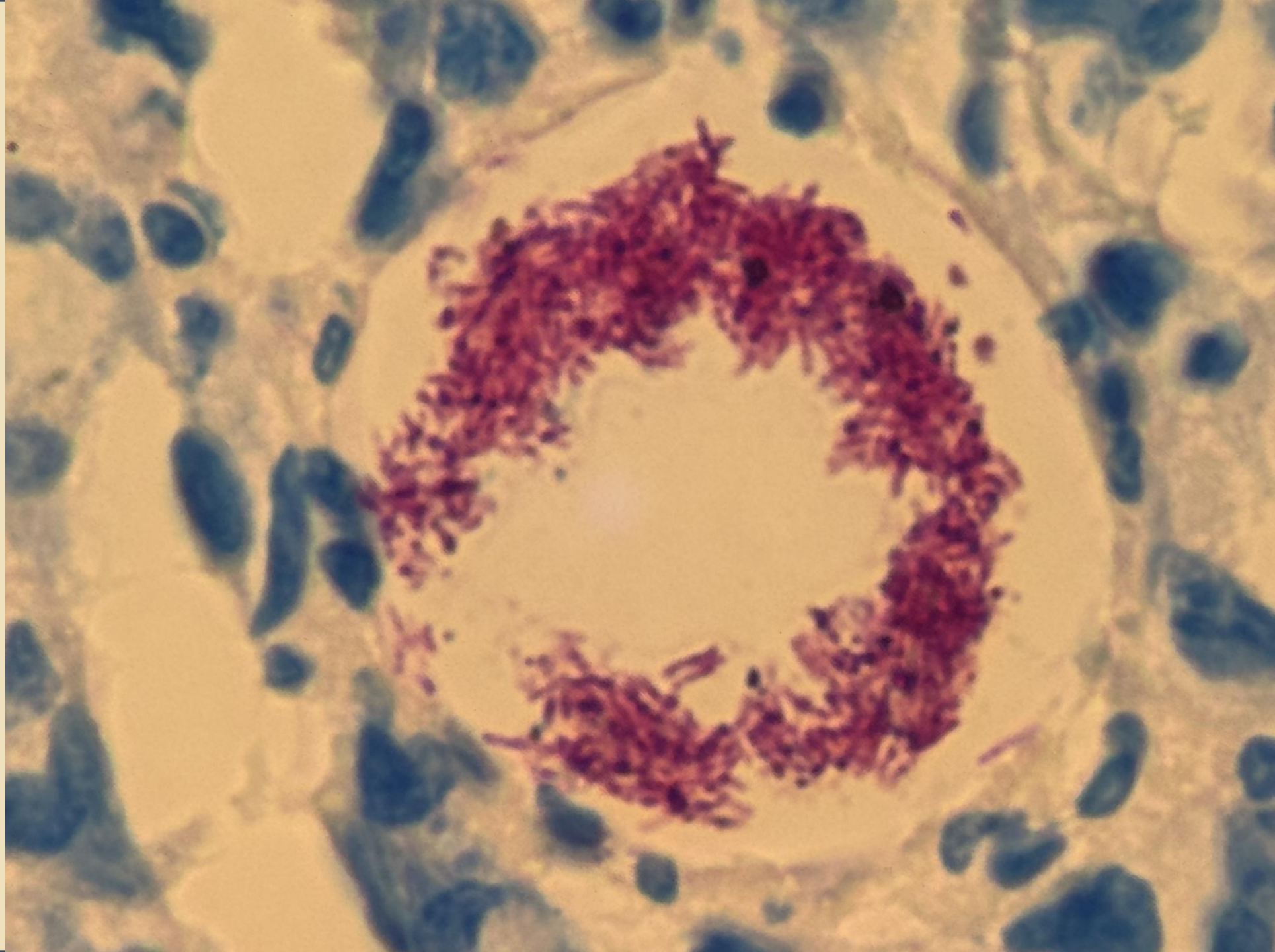


0.1 mm





0.05 mm





Diagnosis

Cutaneous mycobacterial infection associated with tattoo

Key mimics in tattooed skin

Differential	Helpful clues
NTM / deep fungal infection	Suppuration or microabscesses with granulomas
Foreign-body reaction	Giant cells around pigment or other material
Sarcoidal reaction	Compact granulomas, often little surrounding inflammation (so-called “naked granulomas”)
Allergic / lichenoid reaction	Spongiotic or interface dermatitis, often pigment-specific

Clinical overlap is substantial (Histology can be too, particularly in slow-growing mycobacteria vs sarcoid) . Tissue microbiology resolves the differential.



AFB, Fite and culture

Test	Reported result	Study population
AFB on histology	2/17 (12%)	Tattoo outbreak biopsies [1]
Tissue culture	14/17 (82%)	Same tattoo outbreak biopsies [1]
AFB smear	15% positive	Culture-positive specimens [2]
Fite tissue stain	43% positive	Culture-positive cases with biopsy [2]

Study-specific positivity / yield, not universal test sensitivity

[1] Kennedy et al. NEJM 2012;367:1020–1024. doi:10.1056/NEJMoa1205114

[2] Philips et al. JAAD 2019;81:730–739. doi:10.1016/j.jaad.2019.04.022



Diagnostic confirmation

Formalin-fixed tissue

H&E, acid-fast stains (Ziehl-Neelsen, Kinyoun, **Fite**, or **auramine-rhodamine fluorochrome**) and fungal stains as indicated

Separate fresh sterile tissue

Explicit mycobacterial culture request, species identification and susceptibility testing

**** Slow growing mycobacteria may take 2-4 weeks or up to 6-8 weeks to grow depending on media type***

*****A negative acid-fast stain does not exclude NTM***

Common tattoo-associated species:

Predominantly rapid growers *M. chelonae* (most common), *M. abscessus*, *M. fortuitum*

Occasionally slow growers: *M. haemophilum*

Sources: Contaminated ink & Water

Contamination before distribution

Unopened premixed gray ink matched clinical isolates in a documented outbreak ^[1]

Contamination in the shop

Nonsterile water for ink dilution or needle rinsing can introduce NTM ^[2]

“Gray wash”

***Distilled / filtered / reverse-osmosis water may be nonsterile**

[1] Kennedy et al. NEJM 2012;367:1020–1024. doi:10.1056/NEJMoa1205114

[2] CDC. MMWR 2012;61:653–656. FDA. Think Before You Ink: Tattoo Safety.



Clin-Path Correlation

Recent tattoo with persistent papules

Typically appearing 1-4 weeks after tattooing

Suppurative granulomatous Dermatitis

Fresh tissue culture for NTM

Negative stains can coexist with culture-proven infection.

Request mycobacterial culture at 30-32°C as well as 37°C (*M. chelonae*, *M. haemophilum* and *M. marinum* favor lower incubation temperatures (relay that NTM is suspected))



Product recalls

- Product recalls can and do happen

Cases can be submitted to the FDA MedWatch program

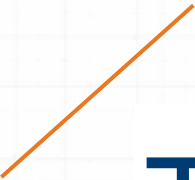
- The **FDA MedWatch program** is the primary system for consumers, tattoo artists, and healthcare professionals to voluntarily report adverse reactions associated with permanent tattoos, temporary tattoos, and permanent makeup.
- Because the FDA regulates tattoo inks as cosmetics and their pigments as color additives, MedWatch monitors these reports to track safety trends, issue safety alerts, and enforce product recalls.

<https://www.fda.gov/cosmetics/cosmetics-news-events/fda-issues-final-guidance-tattoo-inks>



References

- *Preda et al. MJA 2009;190:278–279. doi:10.5694/j.1326-5377.2009.tb02396.x*
- *Kennedy et al. NEJM 2012;367:1020–1024. doi:10.1056/NEJMoa1205114*
- *Philips et al. JAAD 2019;81:730–739. doi:10.1016/j.jaad.2019.04.022*
- *Drage et al. JAAD 2010;62:501–506. PMID:19733936*
- *Sergeant et al. CED 2013;38:140–142. PMID:22831709*
- *CDC. MMWR 2012;61:653–656. Tattoo-associated NTM infections.*
- *VDH. Considering Body Art? FDA. Think Before You Ink: Tattoo Safety.*



Thank you

Special thanks to Lauren Pollicino, PA-C at Richmond Dermatology



SPECIAL TOPICS

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FEB 1, 2022

VTC

Virginia Tech Carilion
School of Medicine

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