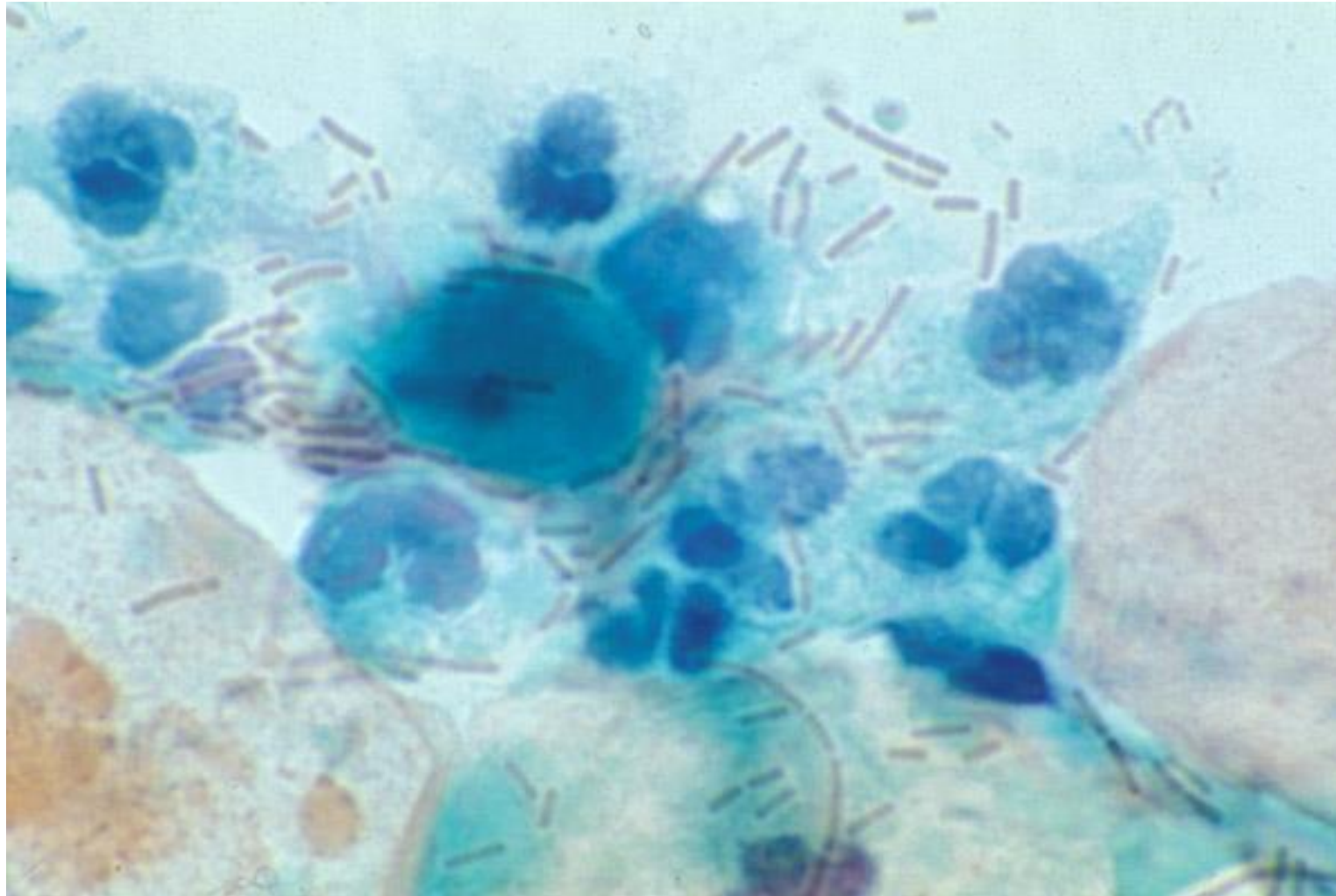


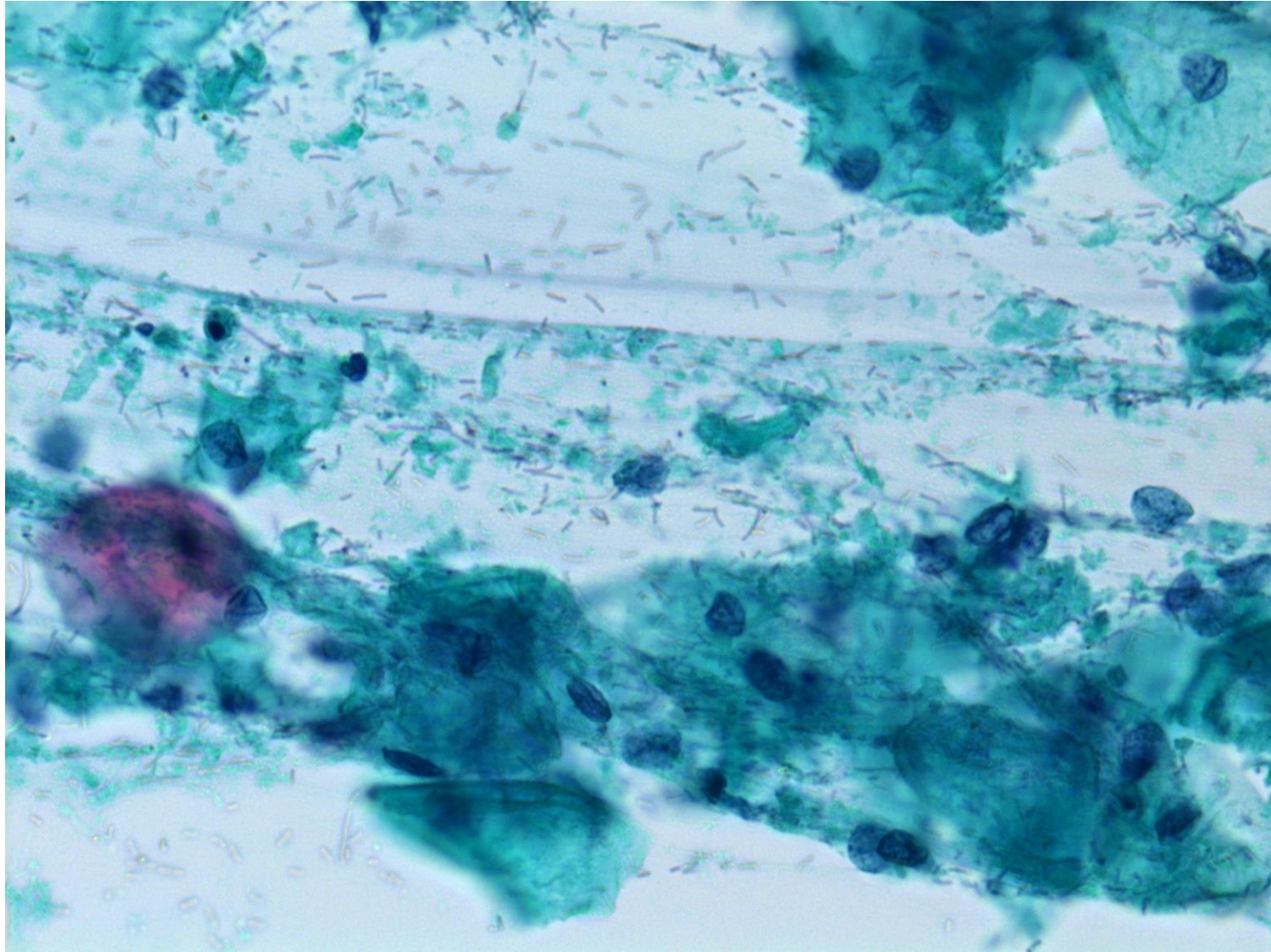
Bacteria seen in vaginal smear preparations

Bacterial vaginitis is featured by milk-like fluor, amine-like smell, increase of pH, cytologic appearance of causative bacteria and absence of normal flora, Döderlein bacilli (*Lactobacillus*). Bacterial vaginitis is caused by *Gardnerella vaginalis*, *Mobiluncus*, or *Atopobium (Fannyhessea) vaginae*. Dense clustering of small-sized *G. vaginalis* on the squamous epithelial cells (clue cells). After menopause, Döderlein bacilli disappear physiologically, and may be replaced by *E. coli*, *Klebsiella pneumonia* or *Pseudomonas aeruginosa*.

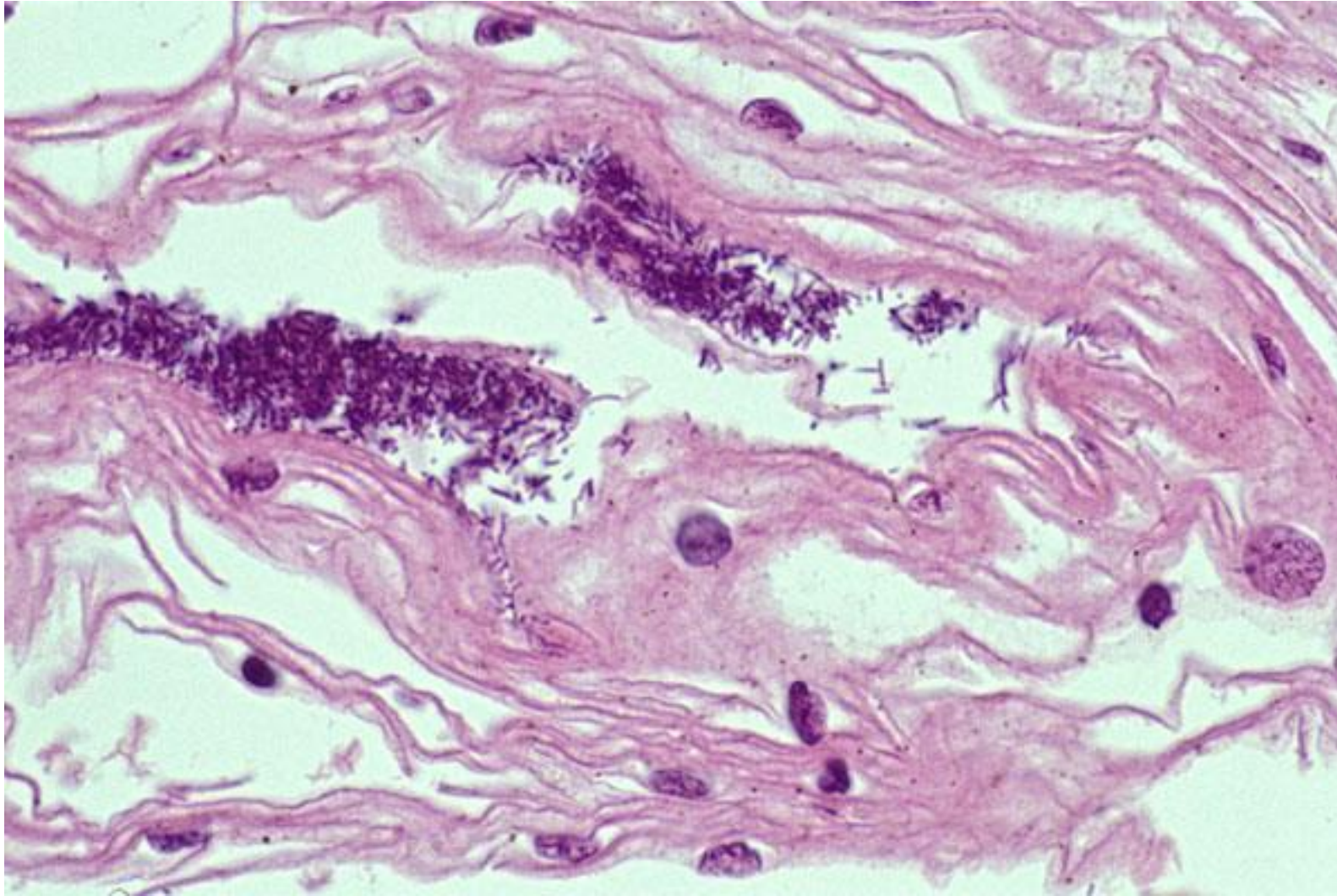
Ref.: Tsutsumi Y. Pathology of Infectious Diseases. 2003.
<https://pathos223.com/en/case/case138.htm>



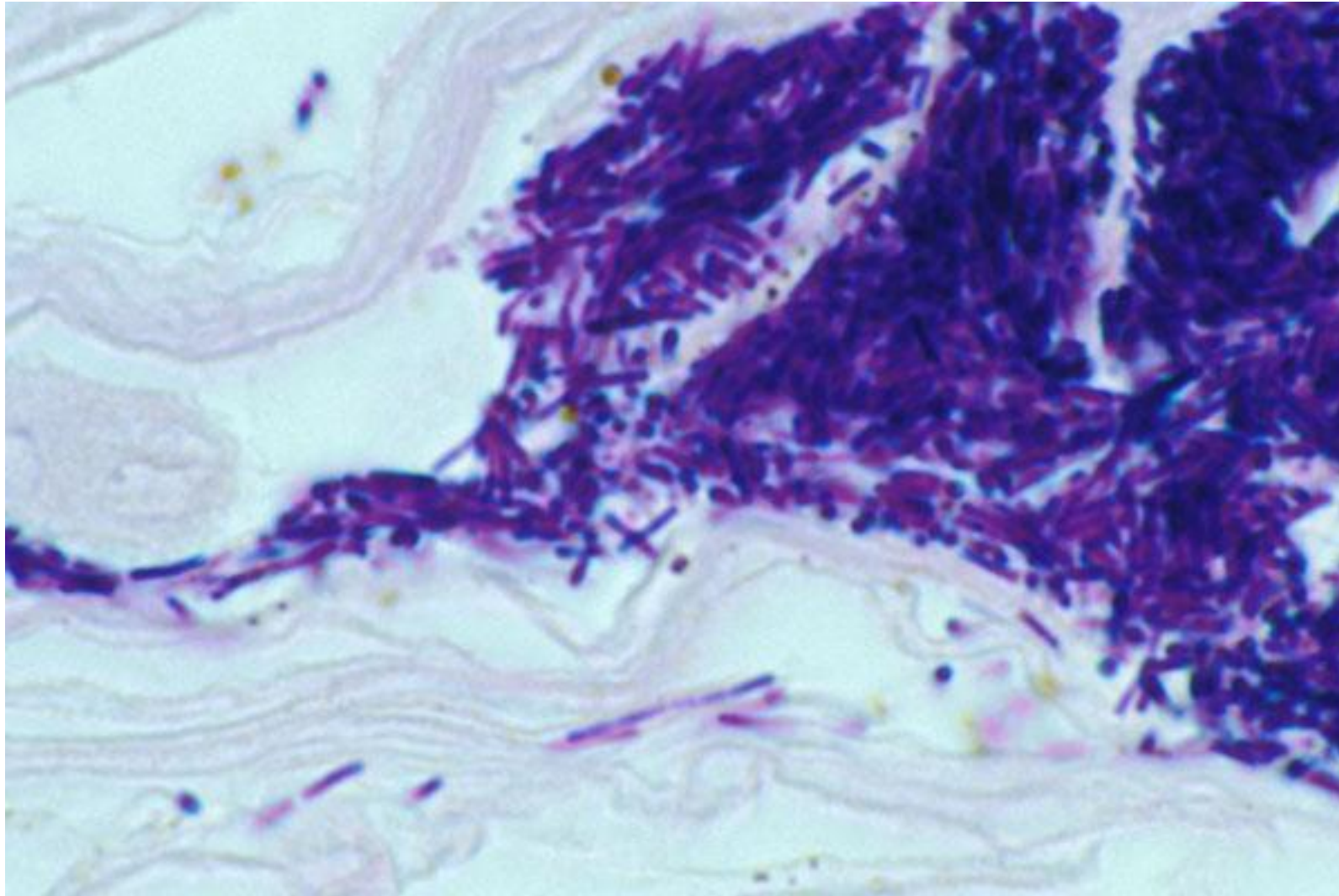
Döderlein bacilli (*Lactobacillus*) (Papanicolaou). Long rods of this type (*Lactobacilli*), the normal flora of the vagina in the premenopausal woman, maintain the acidity of the vaginal lumen. Some are phagocytized by neutrophils.



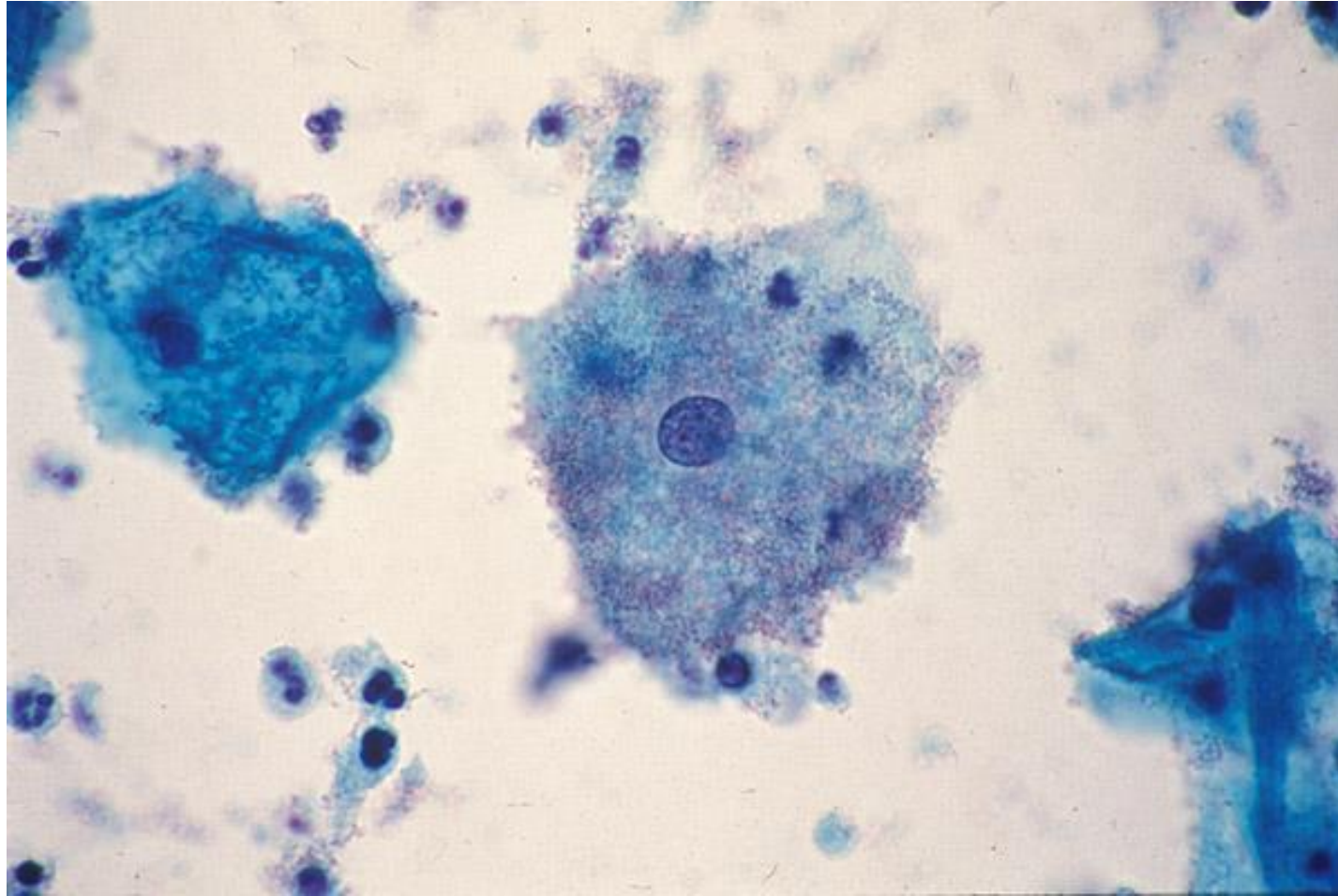
Döderlein bacilli (*Lactobacillus*) (Papanicolaou). Long rods of this type (*Lactobacilli*), the normal flora of the vagina in the premenopausal woman, maintain the acidity of the vaginal lumen by producing lactic acid.



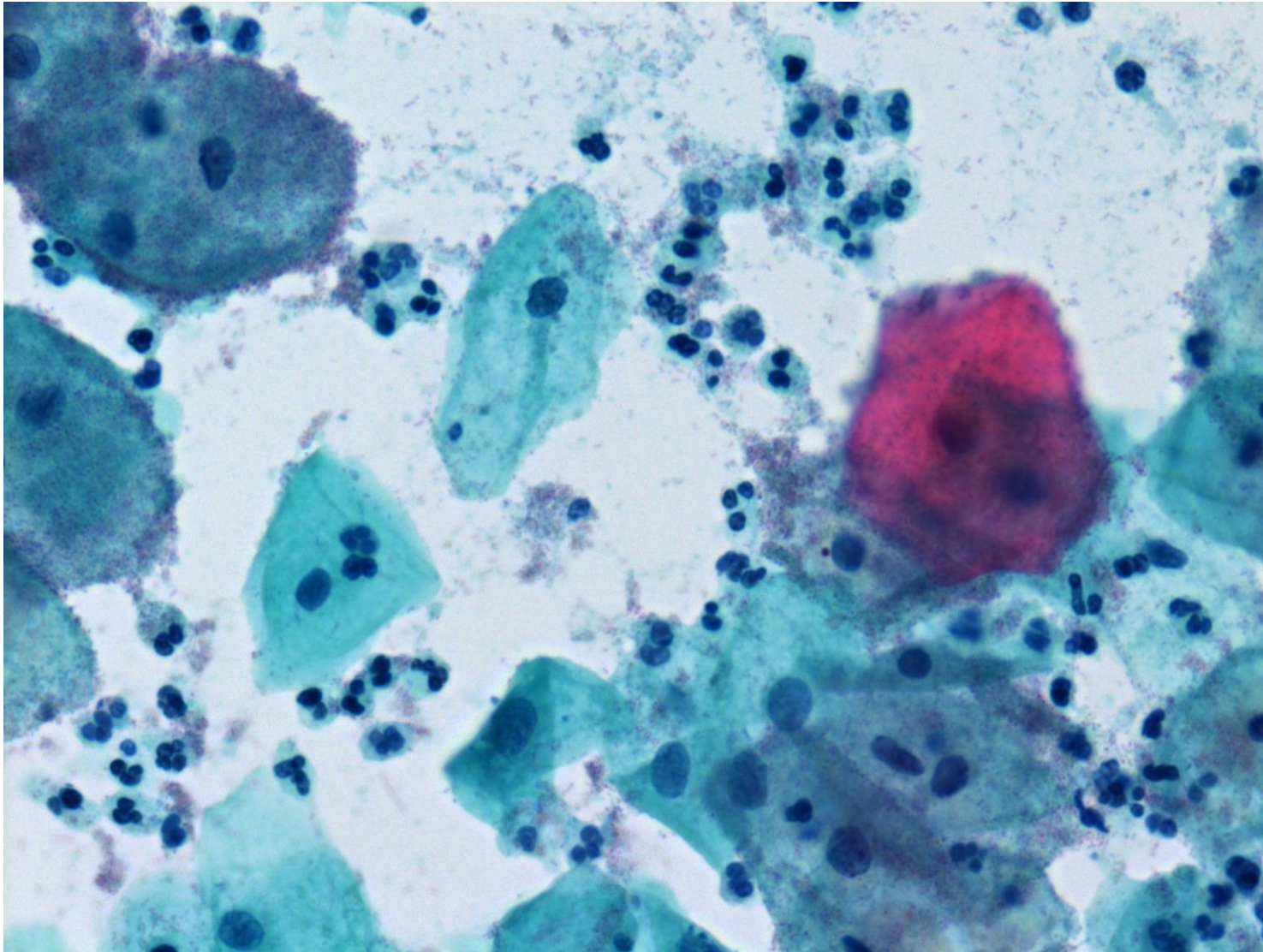
Döderlein bacilli in vaginal squams in a pregnant woman (paraffin section, H&E). Döderlein bacilli usually increase in number in a secretory phase and in pregnancy. Deeply basophilic long rods are seen among the exfoliated squams.



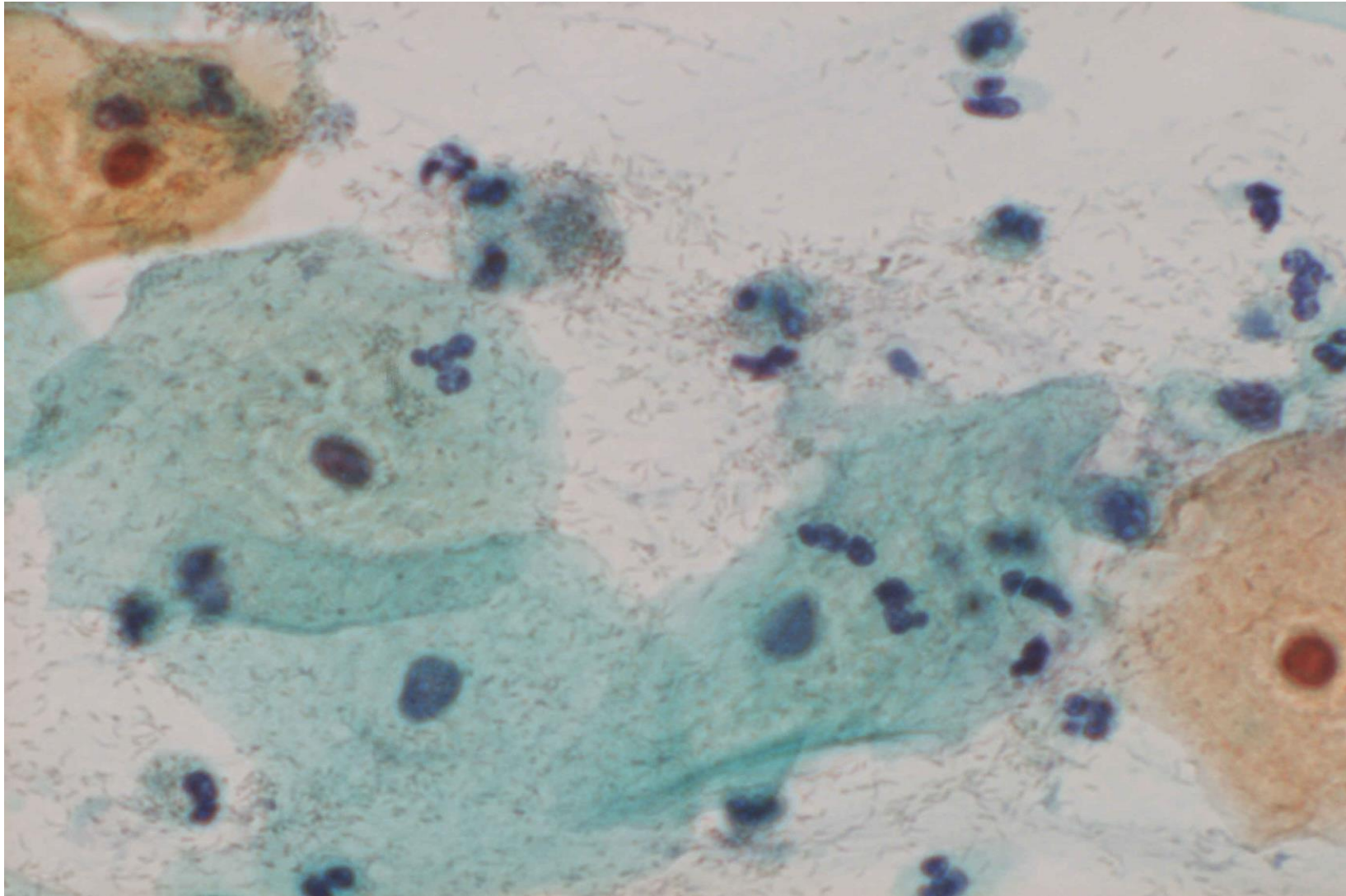
Döderlein bacilli in vaginal squams in a pregnant woman (paraffin section, Gram). *Lactobacillus* among the squams is strongly Gram-positive. This represents a normal variation and not a pathogenic state.



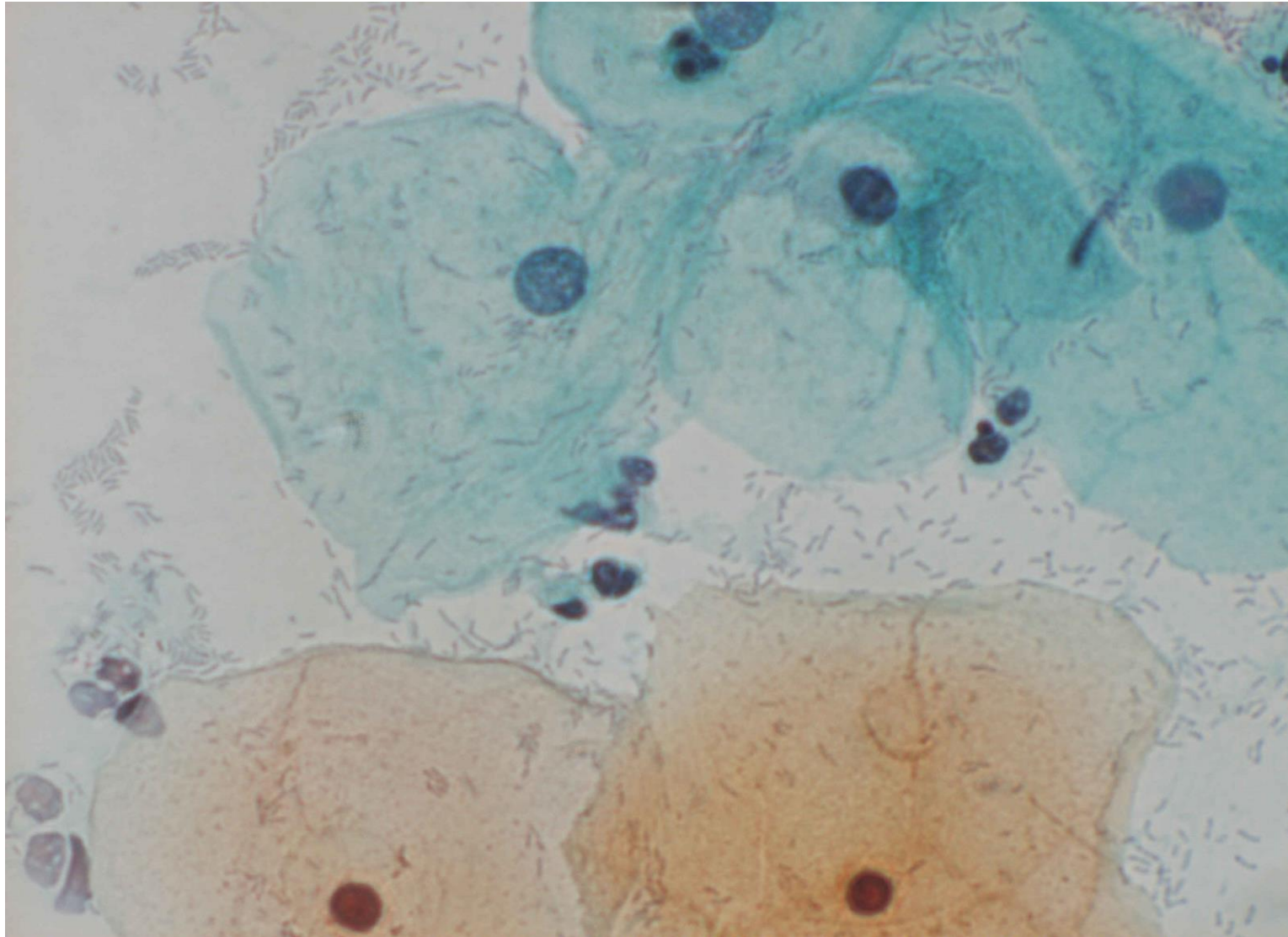
Gardnerella vaginalis (bacterial vaginitis) (Papanicolaou). Small and short (1 to 1.5 μm -sized) Gram-negative non-mobile coccobacillus are clustered onto the squamous epithelium to form "clue cells", pathognomonic of *G. vaginalis* infection. Döderlein bacilli are never seen. Gardnerella infection is often evident in a proliferative phase of the menstrual cycle.



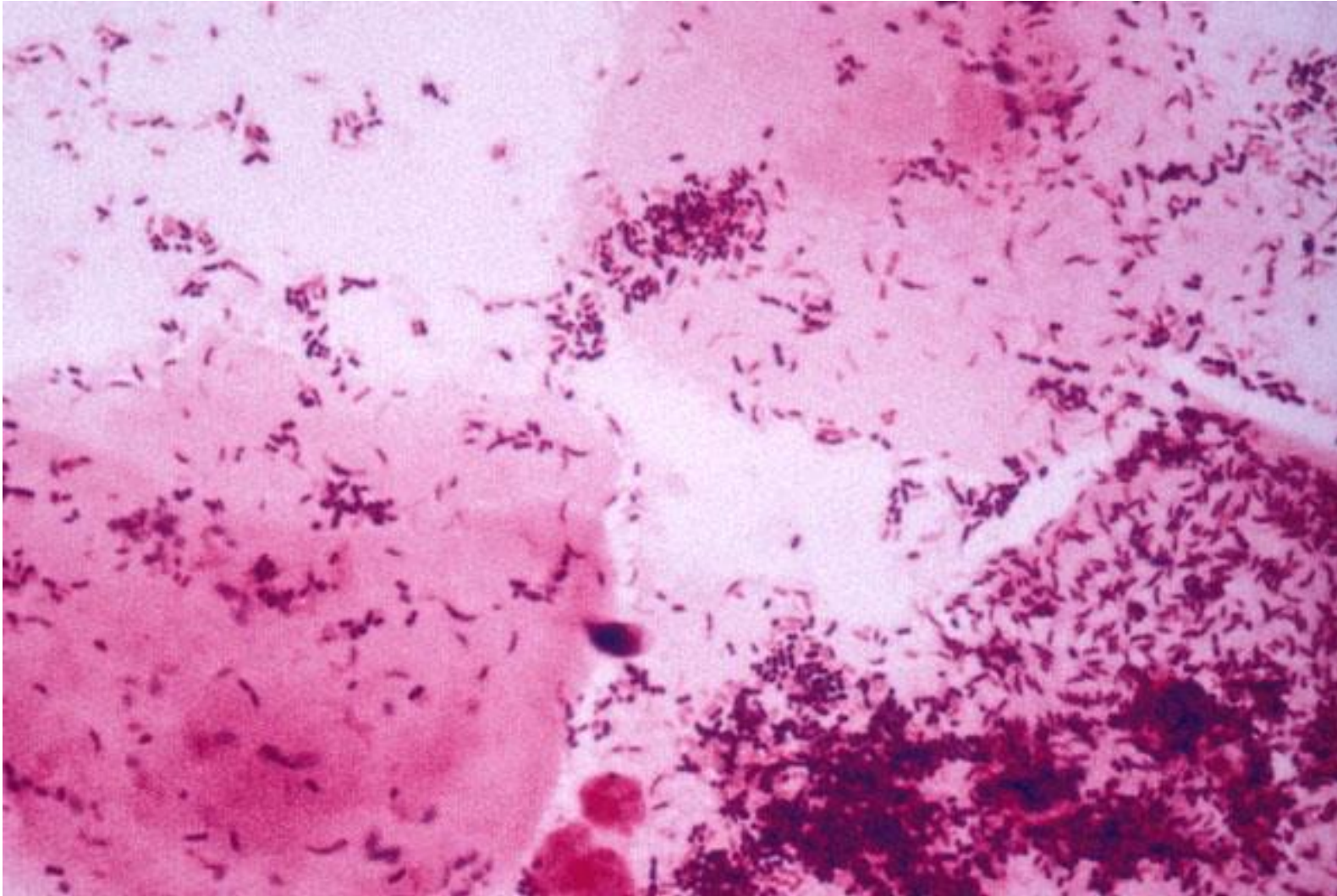
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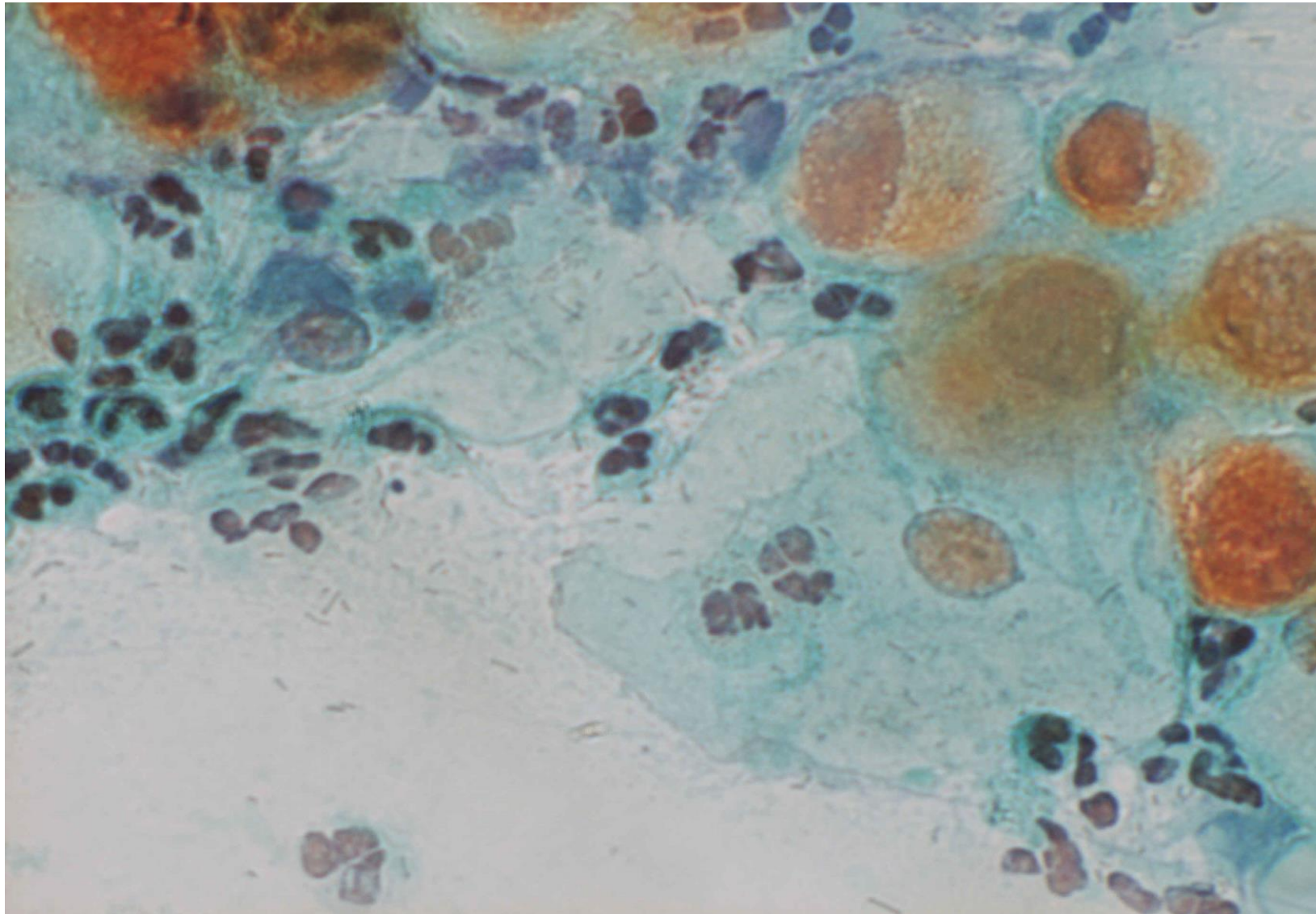
Mobiluncus sp. (bacterial vaginitis) (Gram). Crescent-shaped or curved rods, inconsistently Gram-positive, are seen among the squamous epithelium. Infection of Gardnerella and/or *Mobiluncus* provokes bacterial vaginitis. The term is named after its highly mobile feature.



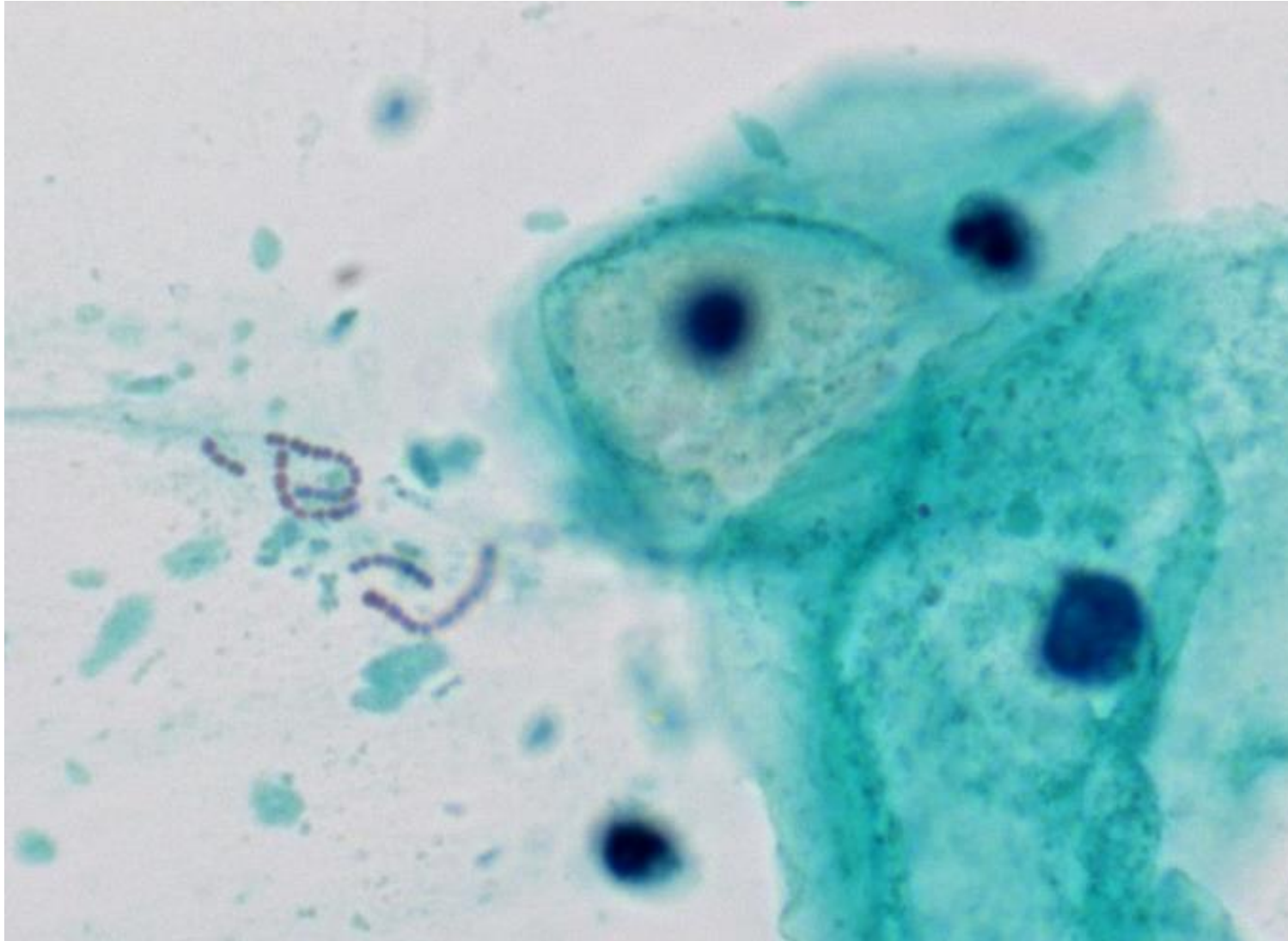
Mobiluncus, spp., causing bacterial vaginitis, is a V-shaped or crescentic, mobile, obligate anaerobic bacillus with unstable Gram reactivity and active mobility. The size is intermediate between Döderlein bacillus and *Gardnerella vaginalis*.



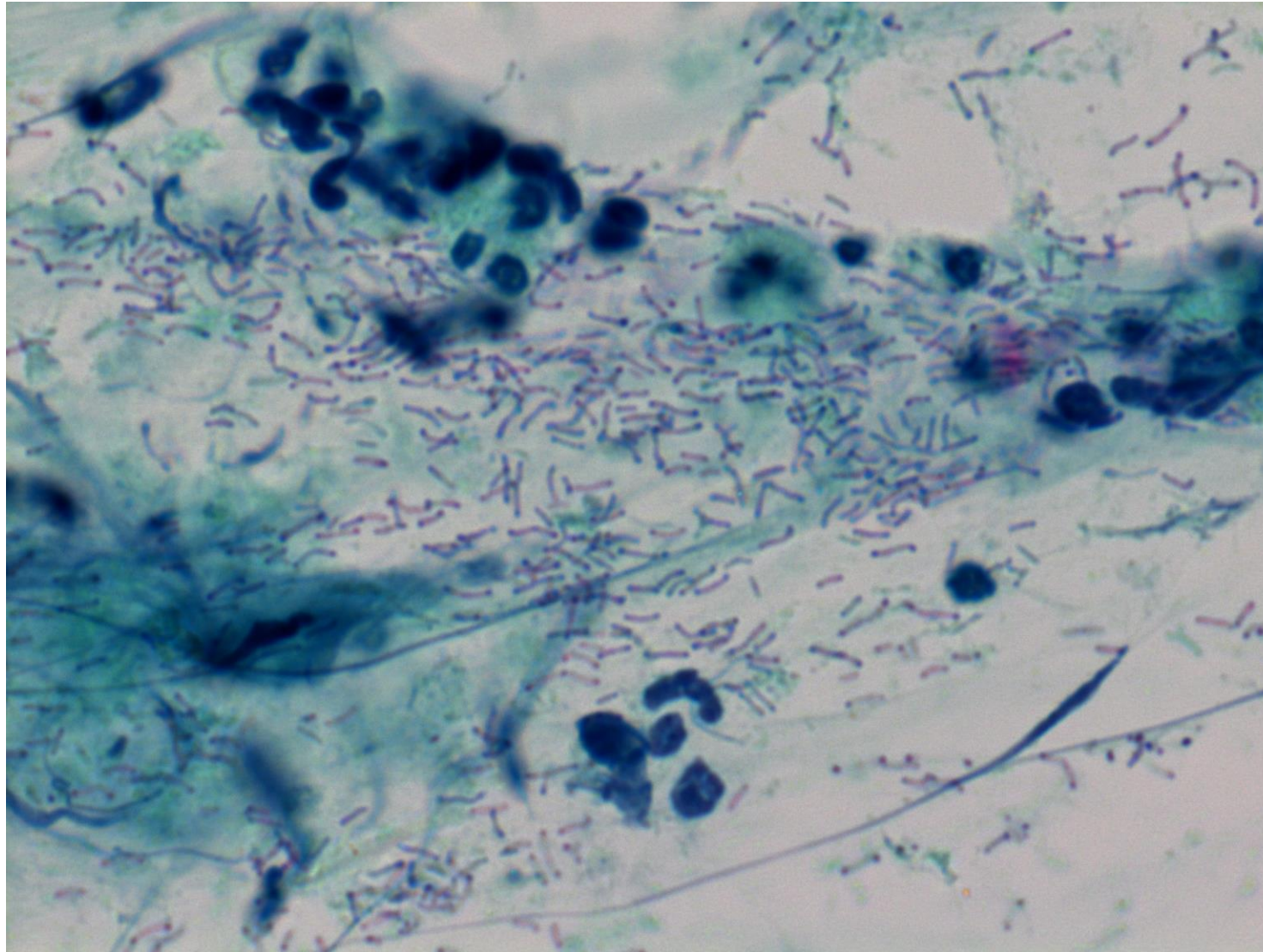
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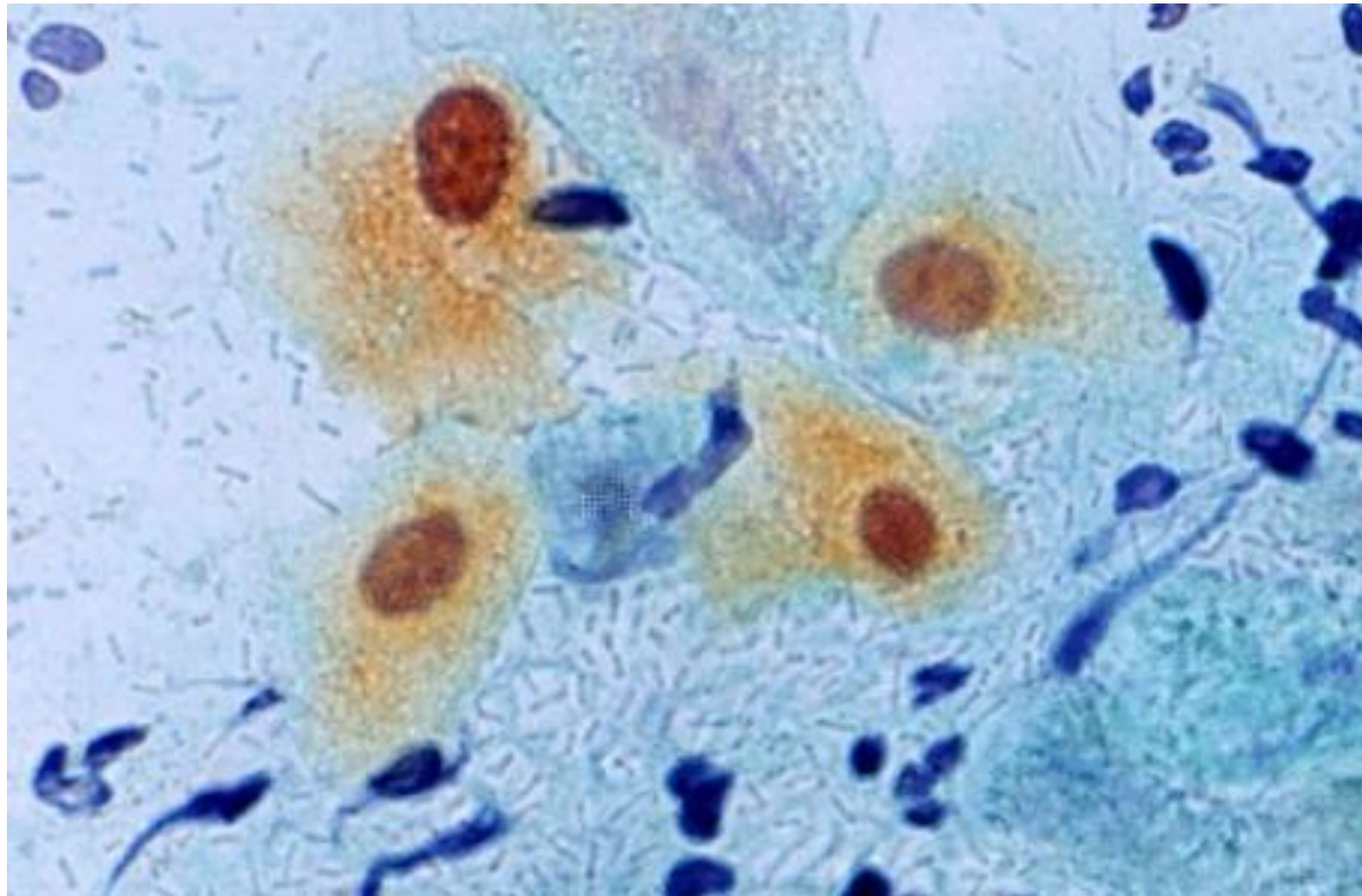
Streptococcal growth in the inflamed vaginal surface (a 27 y-o female case) (Papanicolaou). Small-sized chained cocci are seen. Colonization of group B *Streptococcus* (*S. agalactiae*) is indicated.



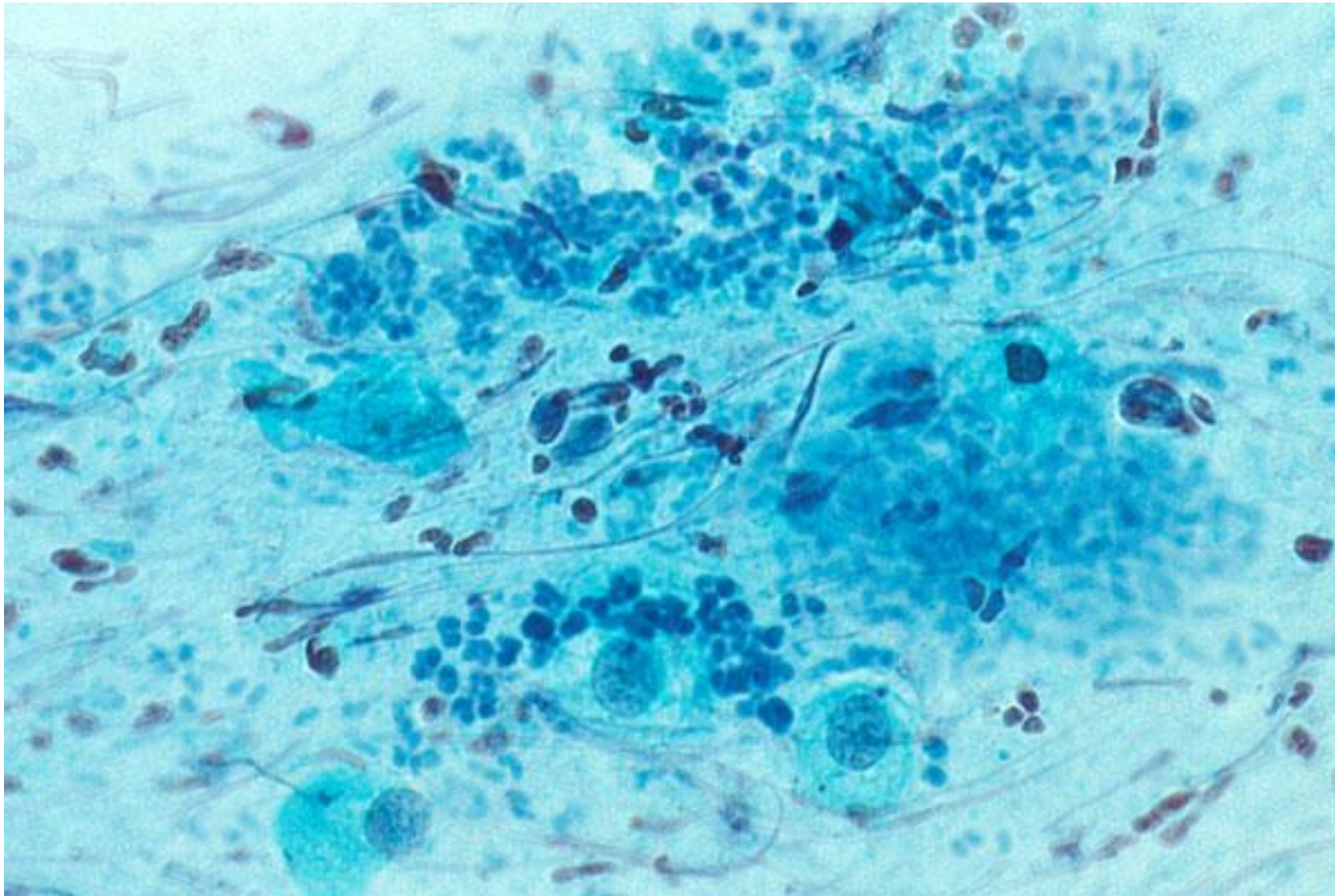
Atopobium (Fannyhessea) vaginae, a recently reported member causing bacterial vaginitis, is a small-sized (less than 1 μm), obligate anaerobic Gram-positive elliptical coccobacillus often forming a short chain (resembling streptococcus).



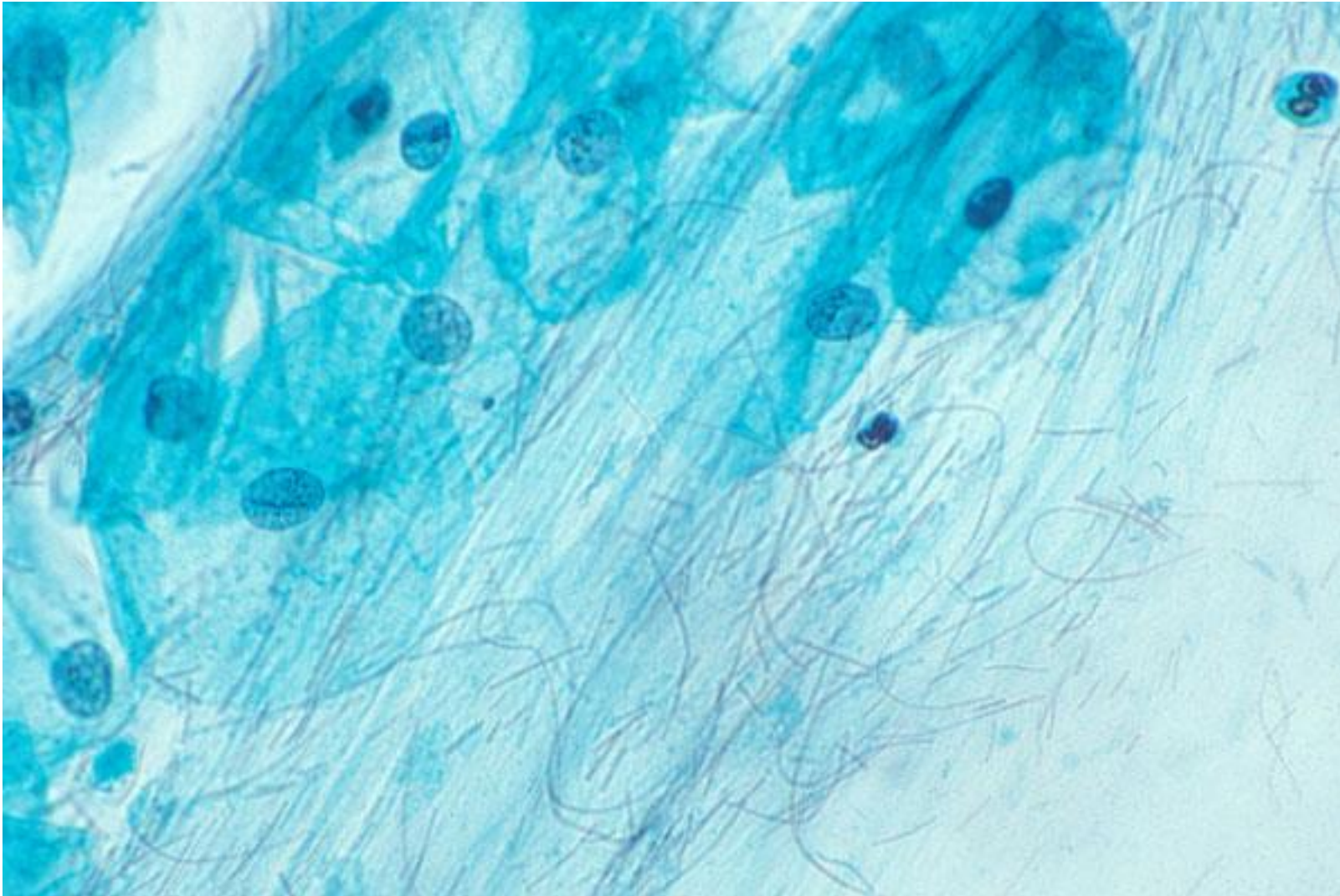
Bacterial vaginitis with seen in a 41 y-o lady. Long diphtheroid rods with clubbing at one or both ends are seen. Vaginitis caused by *Corynebacterium amycolatum* has been reported.
Ref.: Chen X, et al. Vaginitis caused by *Corynebacterium amycolatum* in a prepubescent girl. J Pediatr Adolesc Gynecol 2015; 28(6): e165-e167. doi: 10.1016/j.jpag.2015.03.008



Bacterial vaginitis caused by *Klebsiella pneumoniae*. *K. pneumoniae* is a capsule-forming, large-sized bacillus mainly seen on the postmenopausal vaginal mucosa. Nuclear dysplasia is seen in the superficial-type squamous cells.



Pseudomonas aeruginosa (biofilm infection) (Papanicolaou). Mucoid-type colonies of *Pseudomonas aeruginosa* are observed on the pap smear. This represents a state of chronic persistent (intractable) infection.



Leptothrix spp. (Papanicolaou). Mildly curved, hair-like long bacteria are seen. The bacteria are allegedly non-pathogenic. *Leptothrix* is also occasionally seen in the urine.