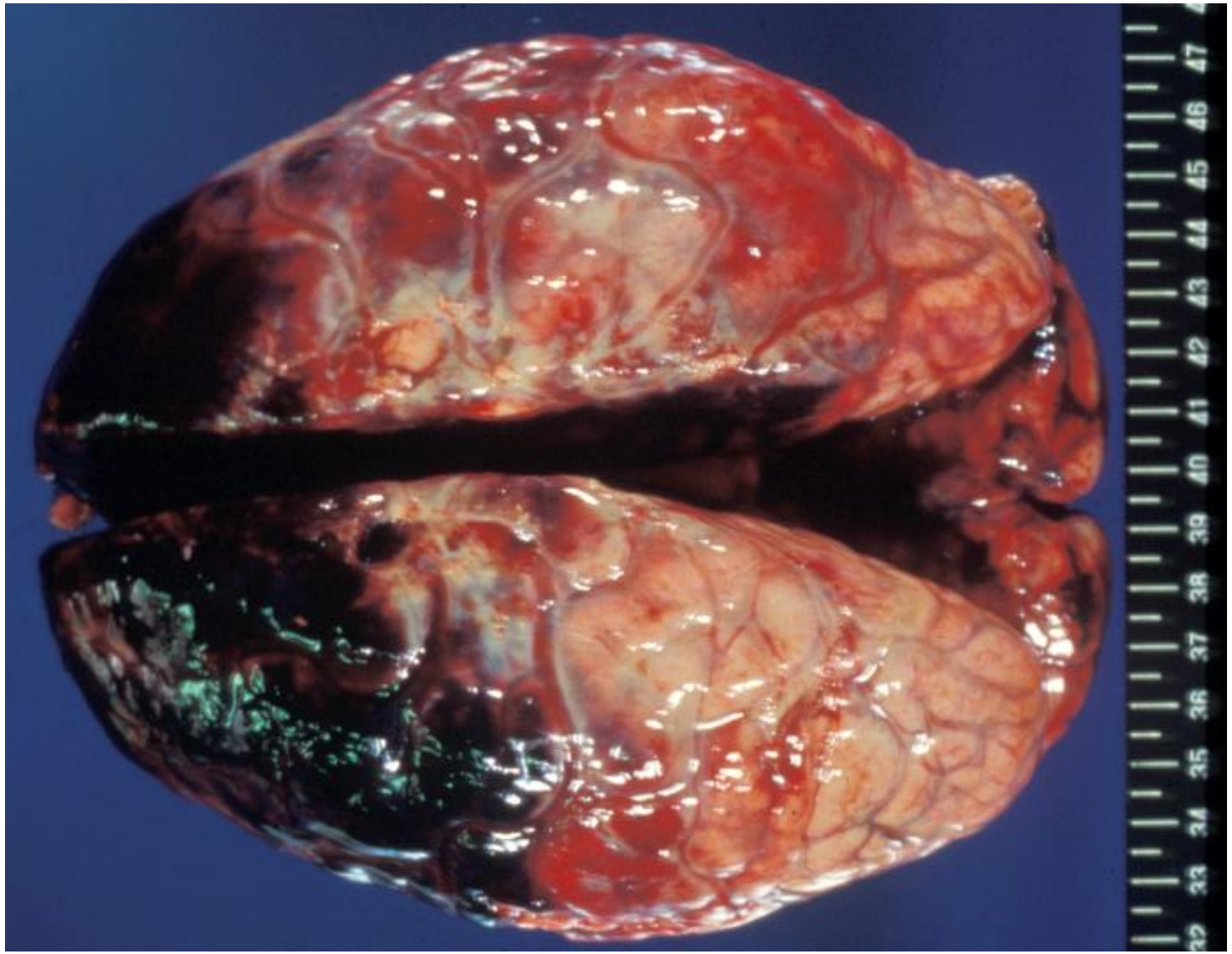
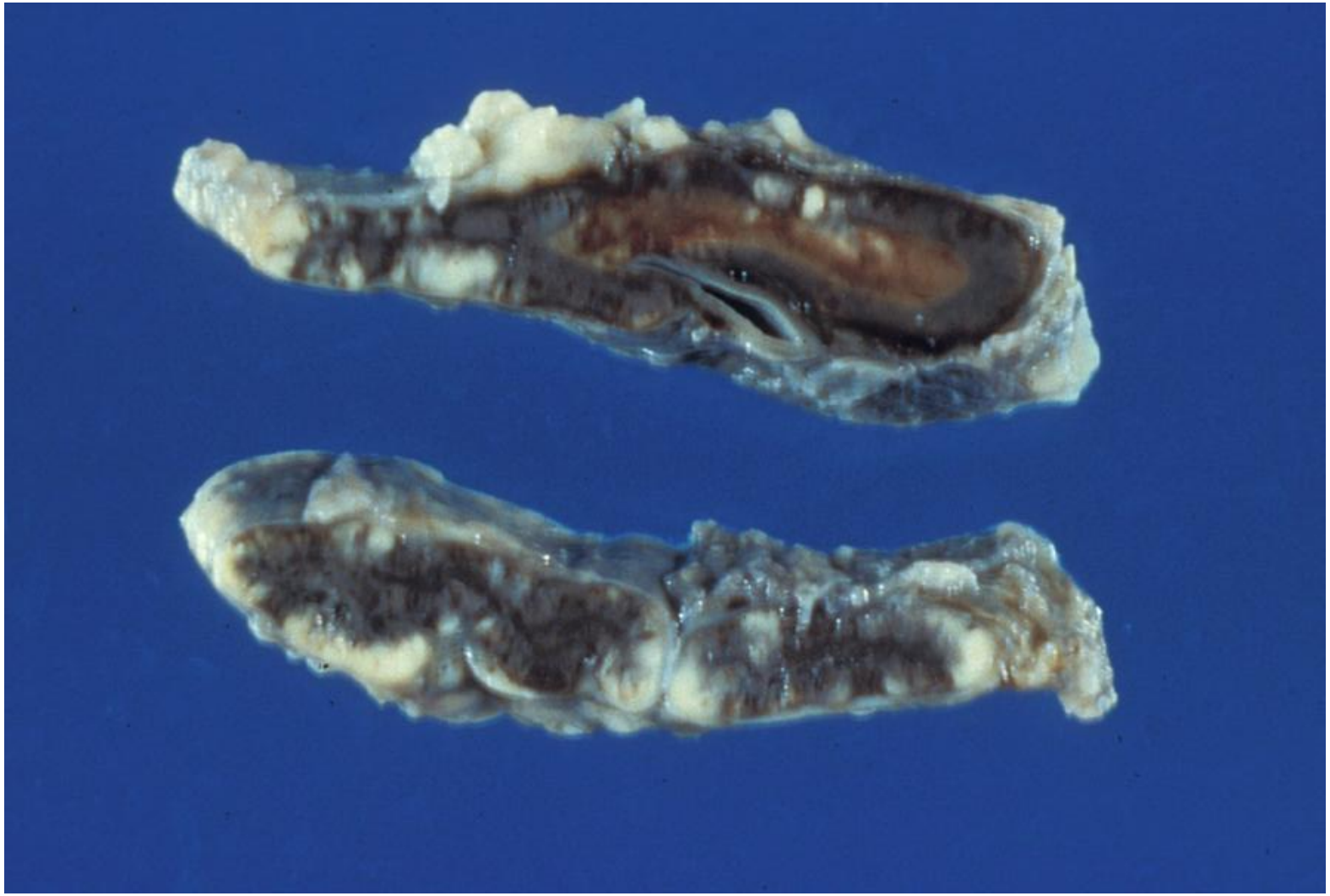
Bacterial purulent meningitis

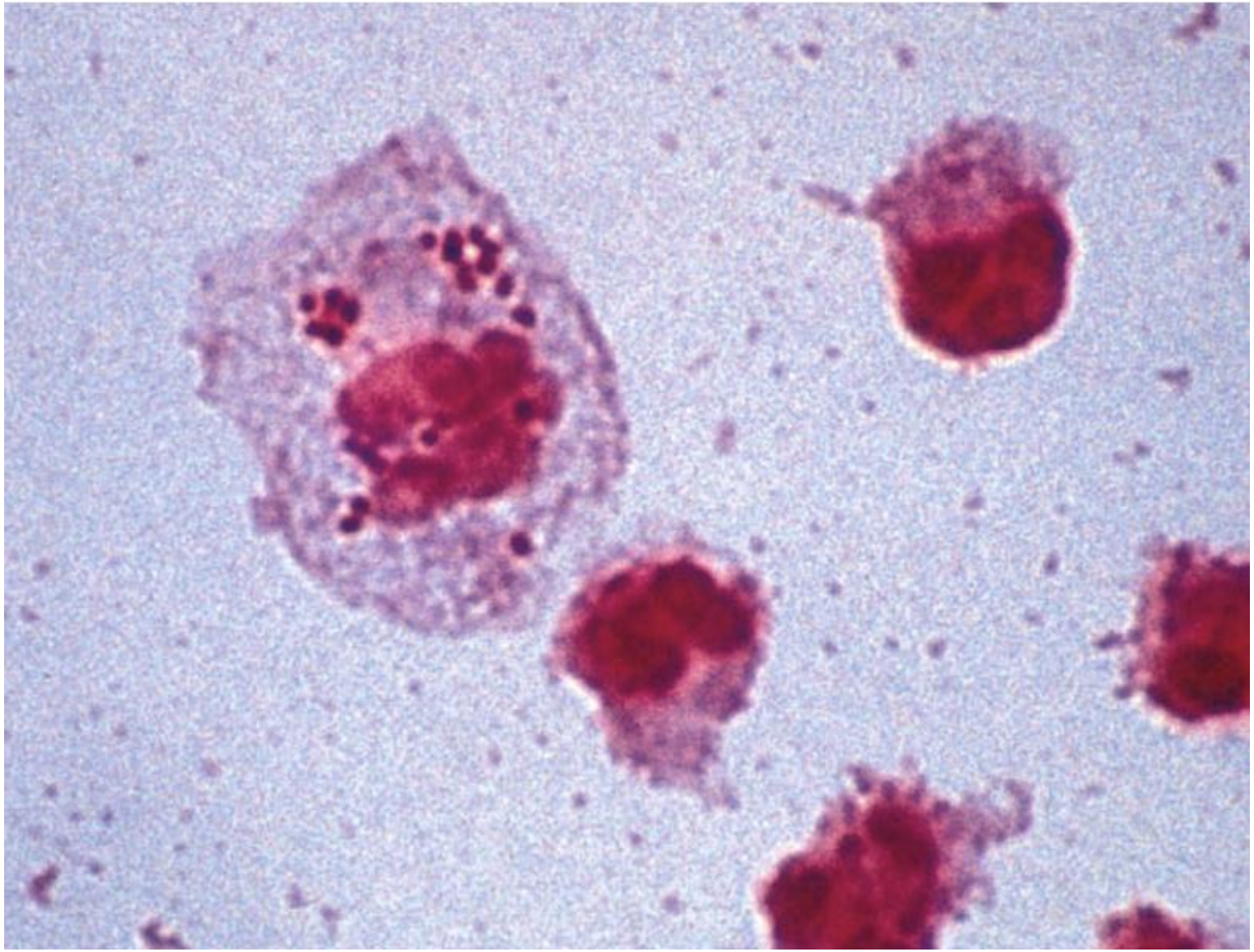
Community-acquired bacterial purulent meningitis shows a rapid onset with high rates of mortality. Meningitis occurs when bacteria evade mucosal and circulating immune responses and invade the brain directly or across the blood–brain barrier. Clinical triad includes fever, headache and neck stiffness. Cerebrospinal fluid culture and PCR are diagnostically important. Serotype or serogroup-specific conjugate vaccines against the capsule are effective to prevent the serious illness.



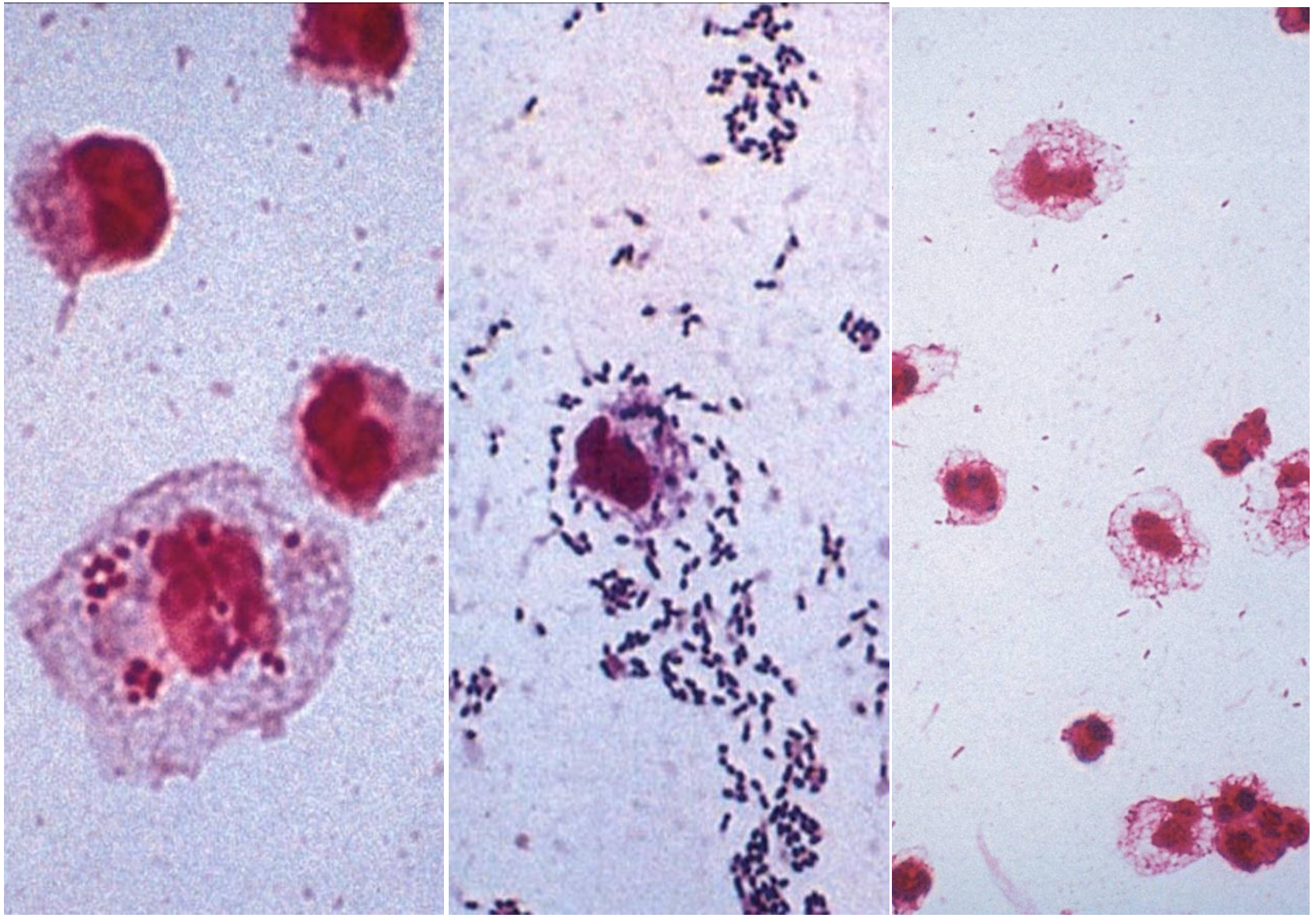
Lethal meningococcal meningitis: hemorrhagic purulent meningitis is seen in a female patient aged 20’s years.
The onset was just after coming back from a travel abroad.



Lethal meningococcal meningitis in a female patient aged 20's years. Bilateral adrenal hemorrhage provoked Waterhouse-Friedrichsen syndrome (acute adrenocortical failure) with disseminated intravascular coagulopathy.

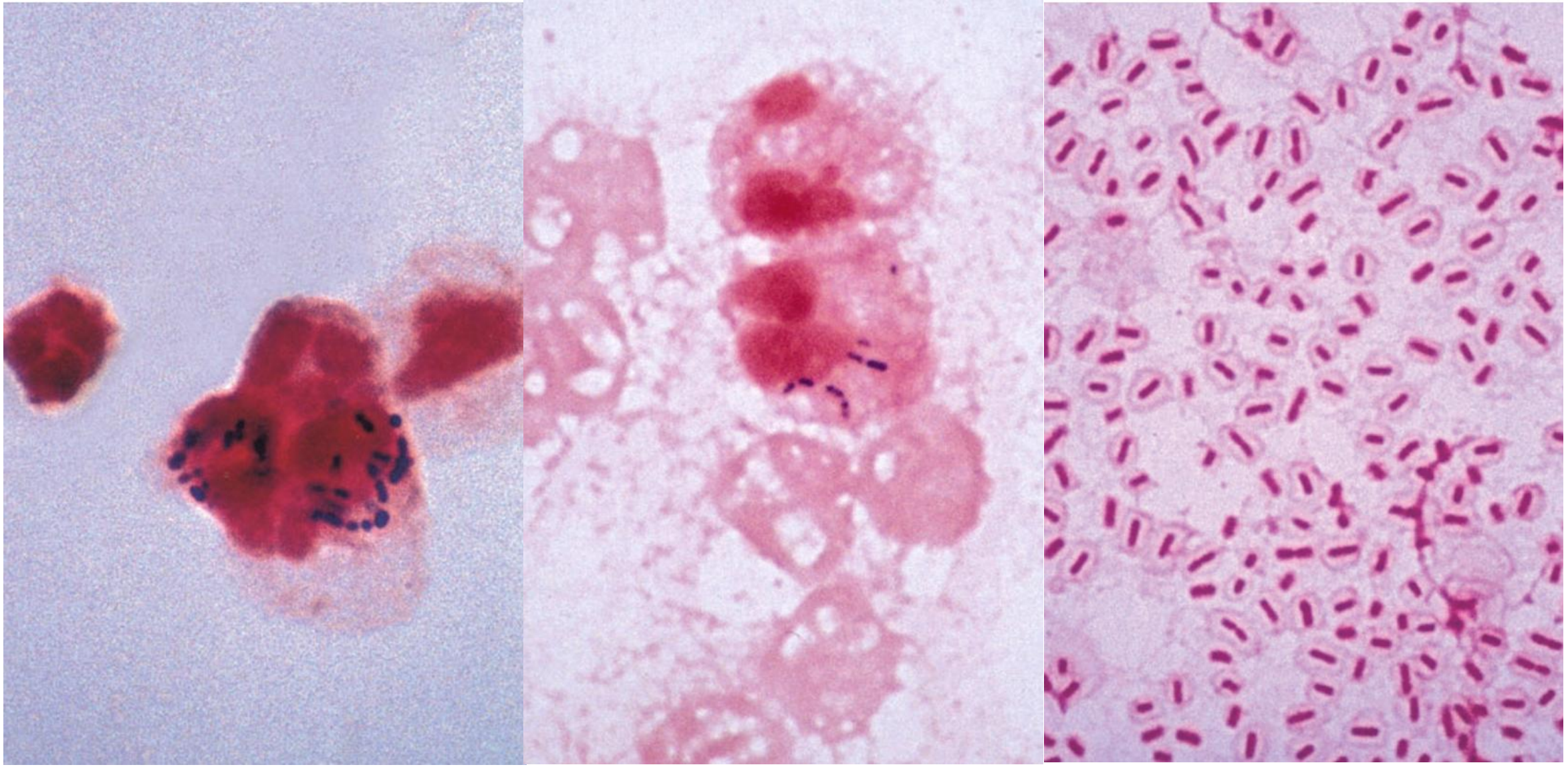


Meningococcal meningitis: Gram-negative cocci are phagocytized by neutrophils. Gram stain in cerebrospinal fluid (CSF)

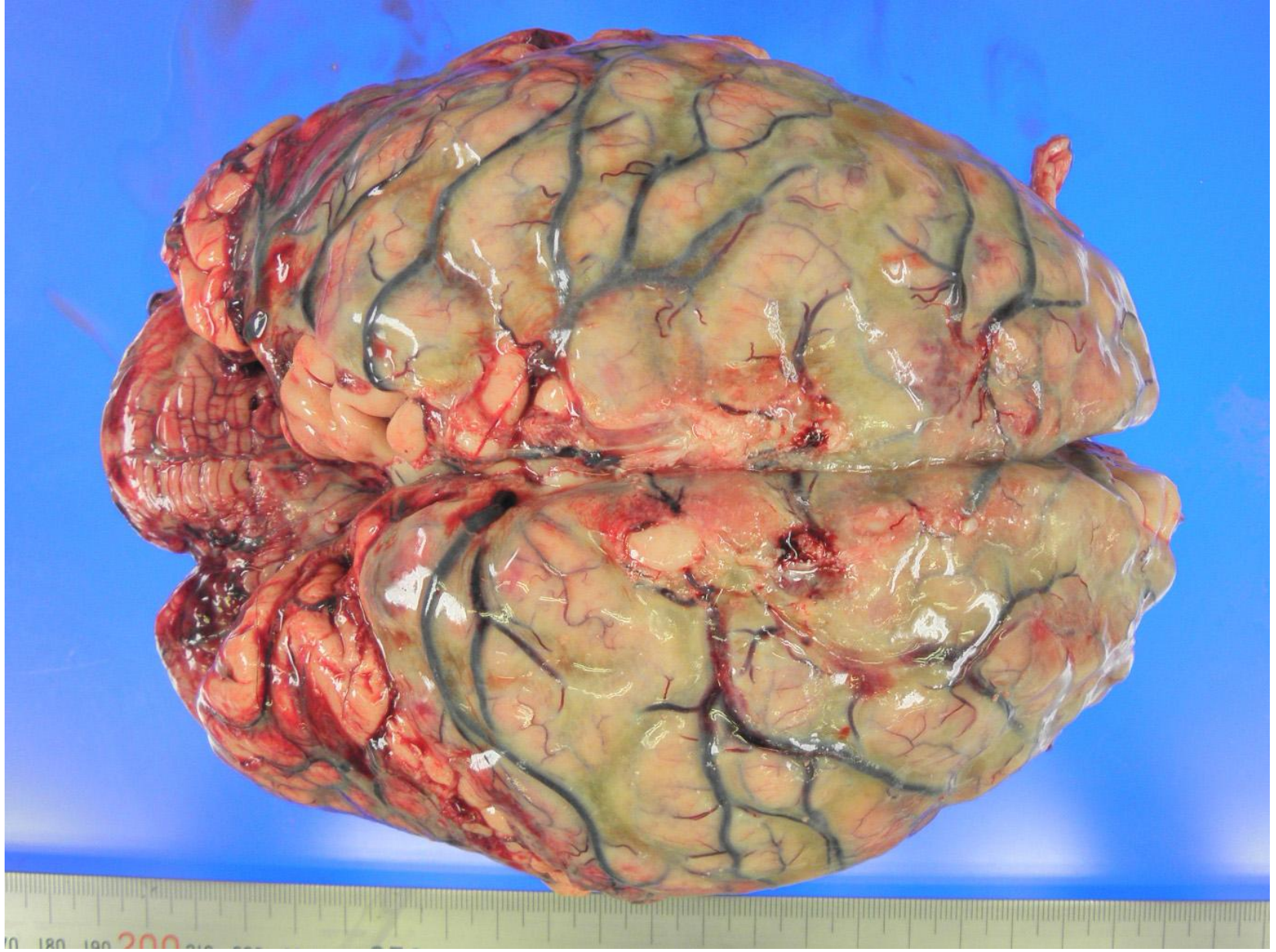


Three major bacterial pathogens causing purulent meningitis (Gram stain)
left: *Neisseria meningitidis*, center: *Streptococcus pneumoniae*, right: *Haemophilus influenzae*
All three bacteria are capsule-forming.

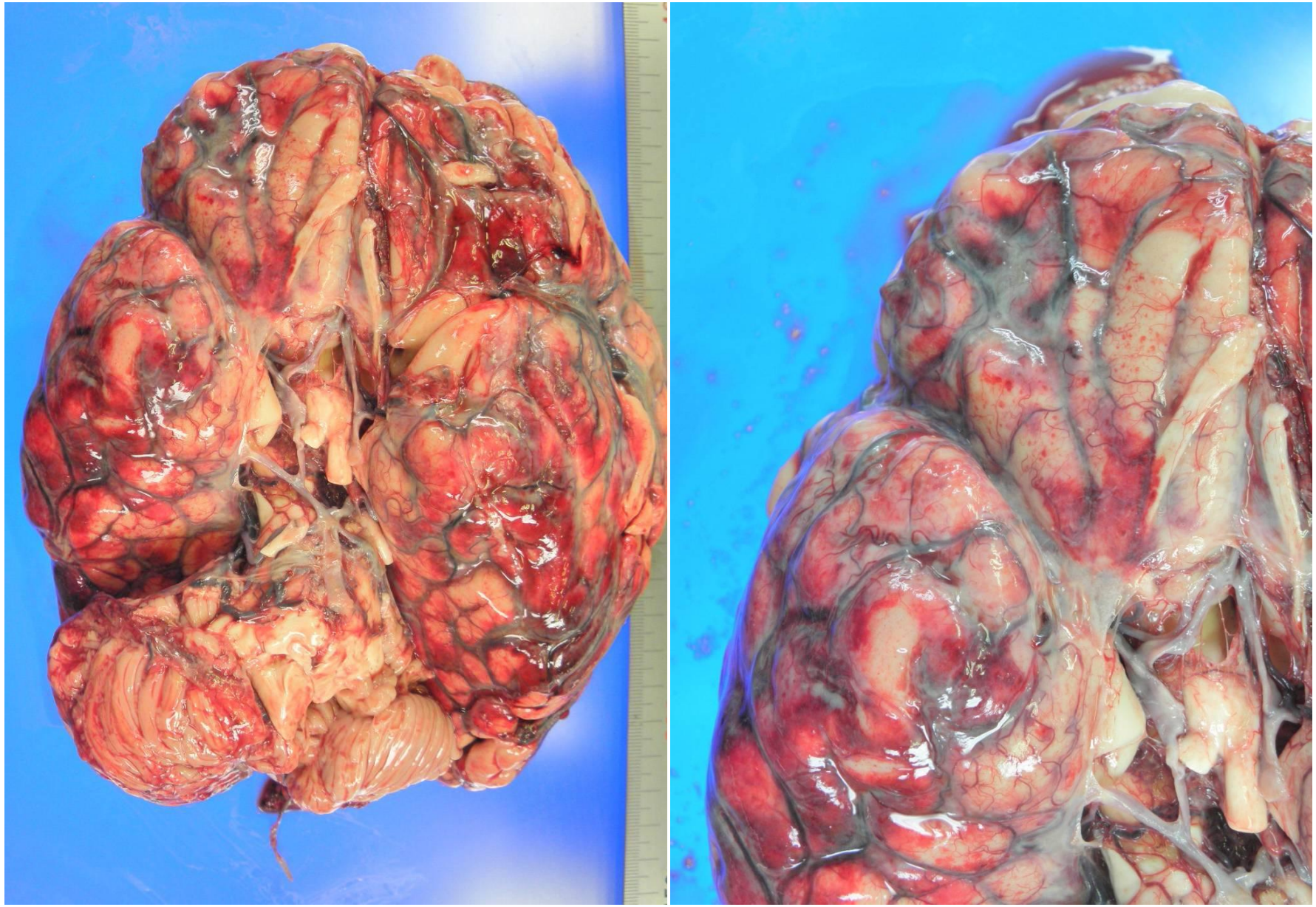
"African meningitis belt": the endemnic areas with severe bacterial meningitis caused by *Neisseria meningitidis* and *Streptococcus pneumoniae*



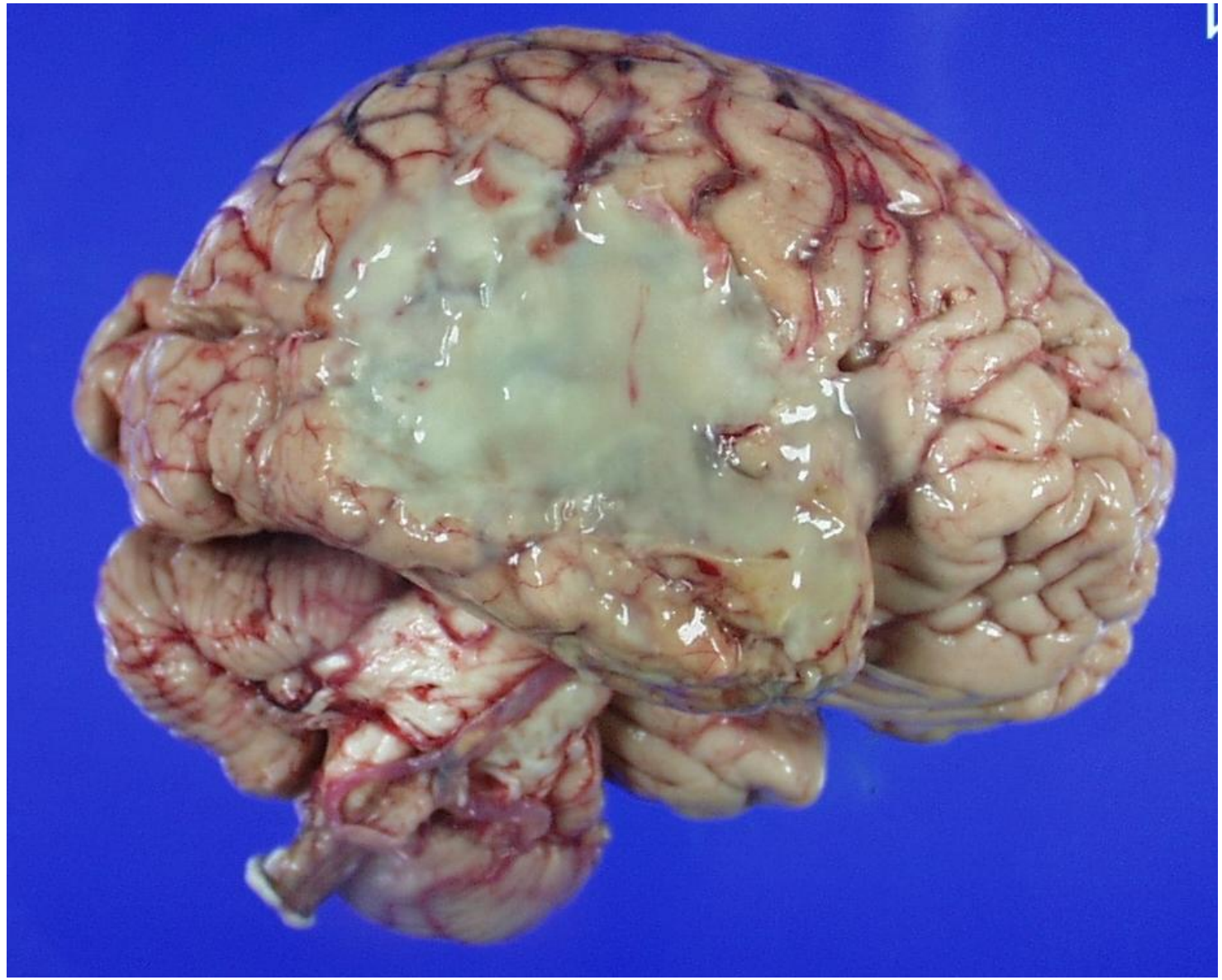
Other bacteria causing purulent meningitis (CSF: Gram stain)
Left: group B *Streptococcus* (mainly affecting newborns)
Center: *Listeria monocytogenes* (mainly affecting the elderly)
Right: *Klebsiella pneumoniae* (mainly affecting the elderly)



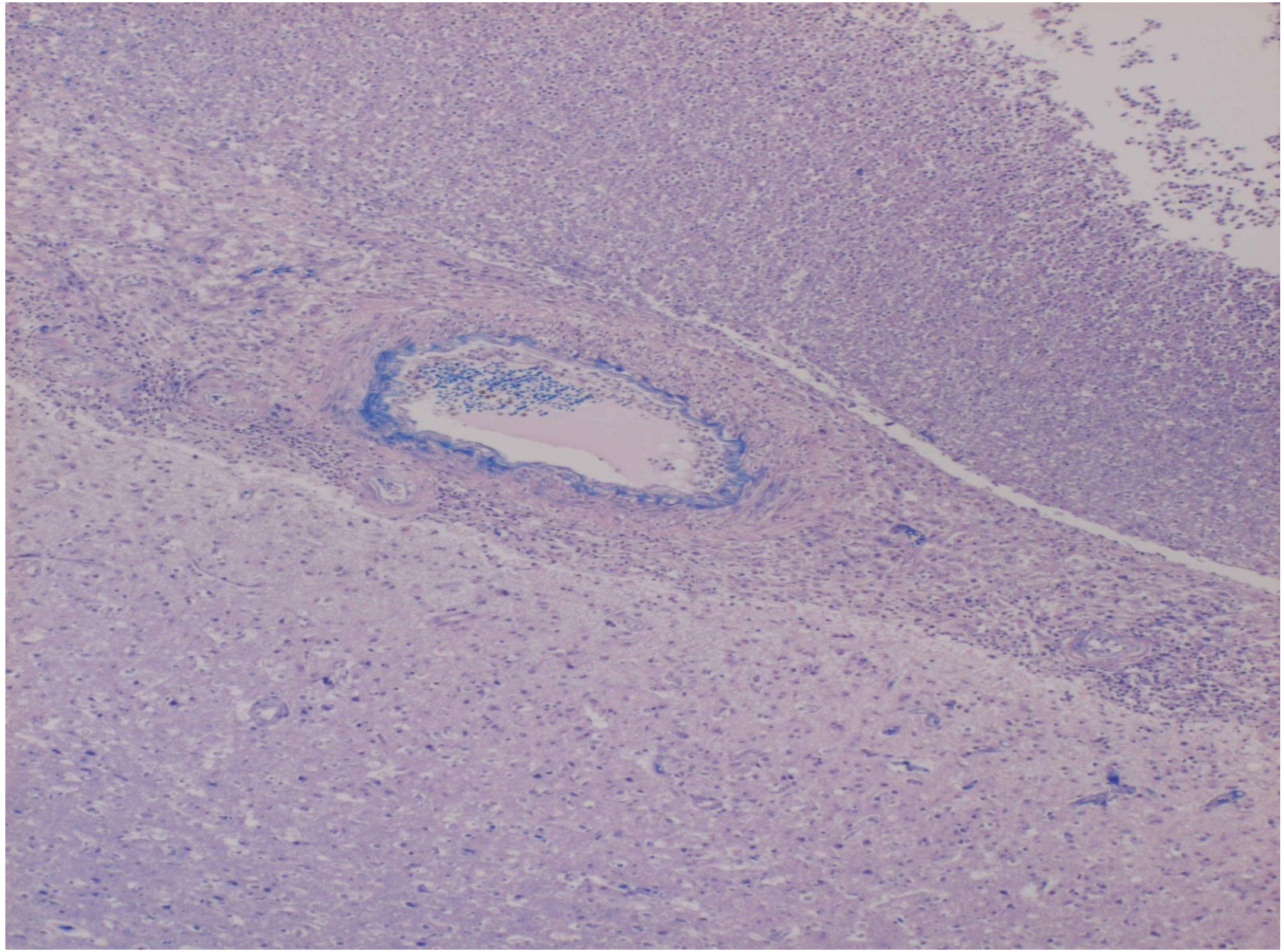
Streptococcus pneumoniae-induced purulent meningitis, disseminated from lumbar epidural abscess-1



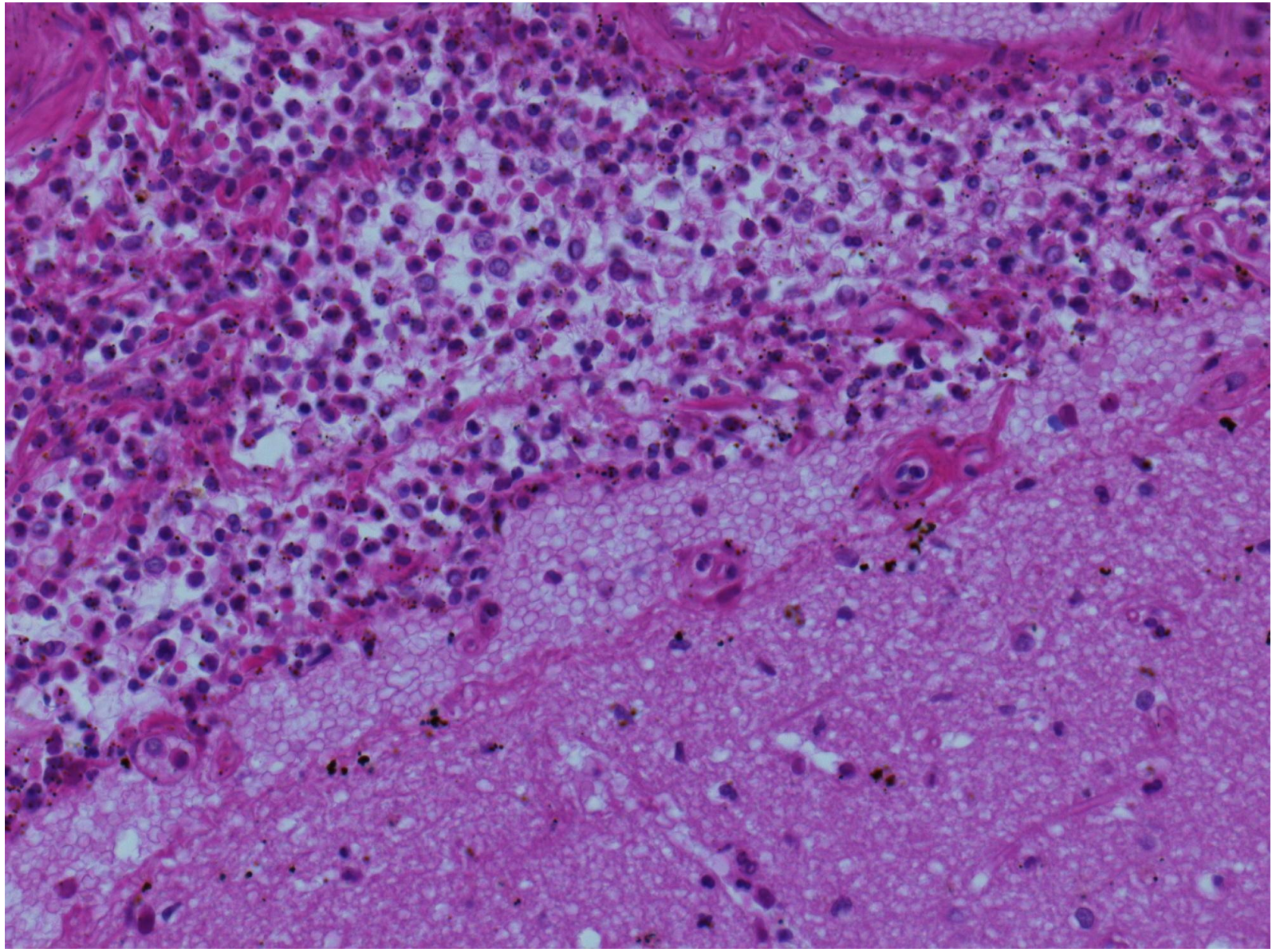
Streptococcus pneumoniae-induced purulent meningitis,
disseminated from lumbar epidural abscess-2



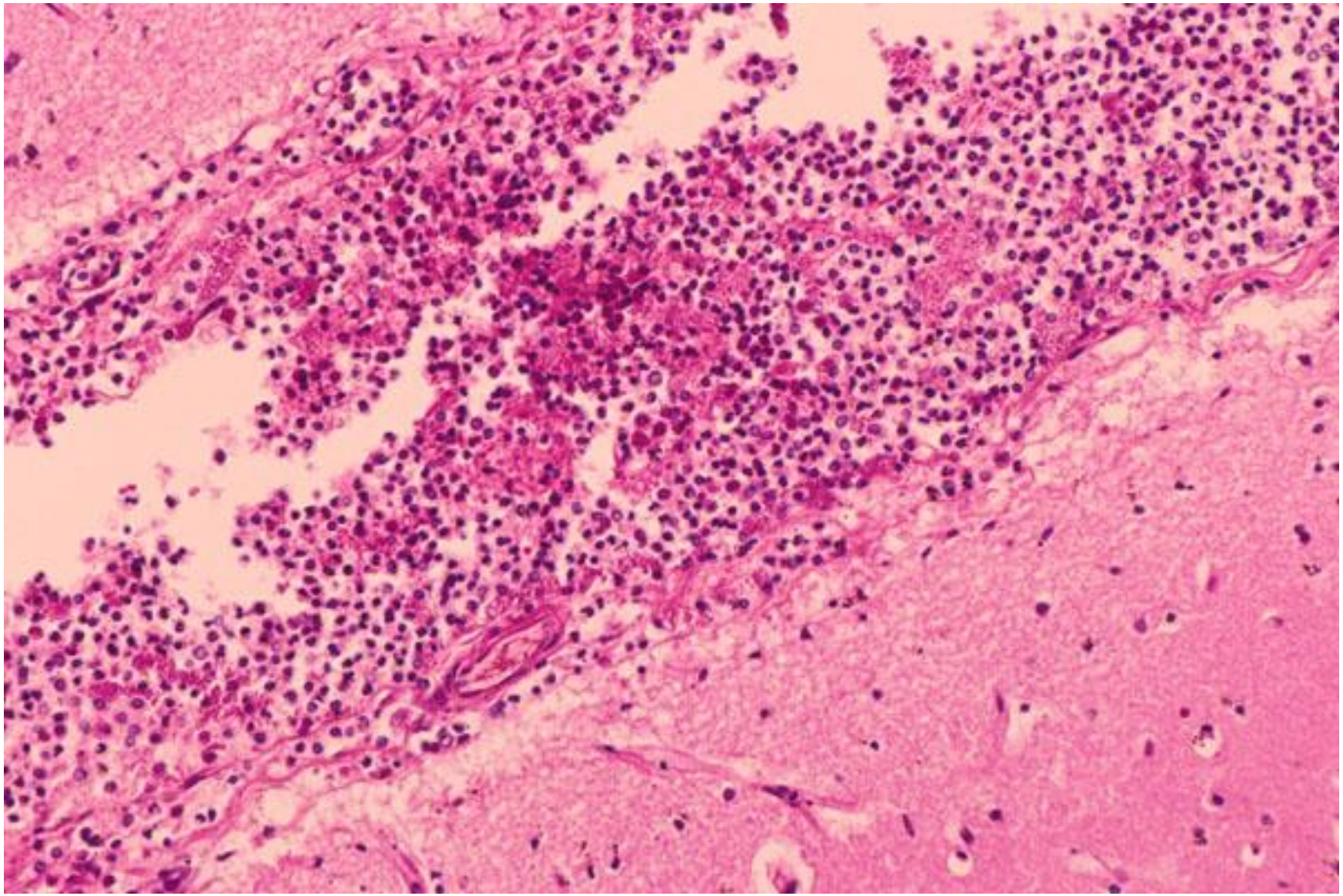
Pseudomonas aeruginosa-induced acute suppurative meningitis secondary to acute otitis media（localized retention of pus in the subarachnoid space）



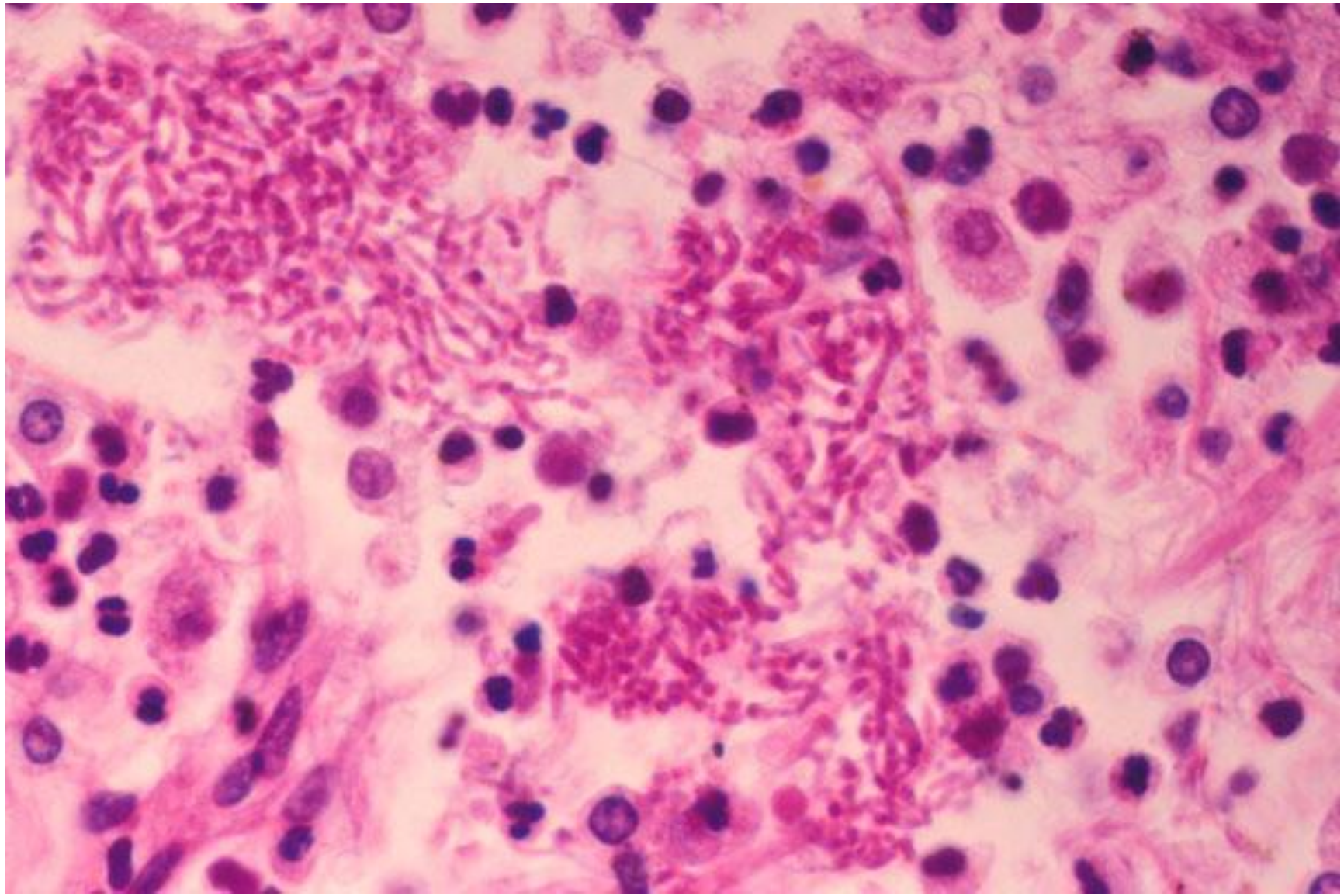
Microscopic findings of acute suppurative meningitis（VB-HE）



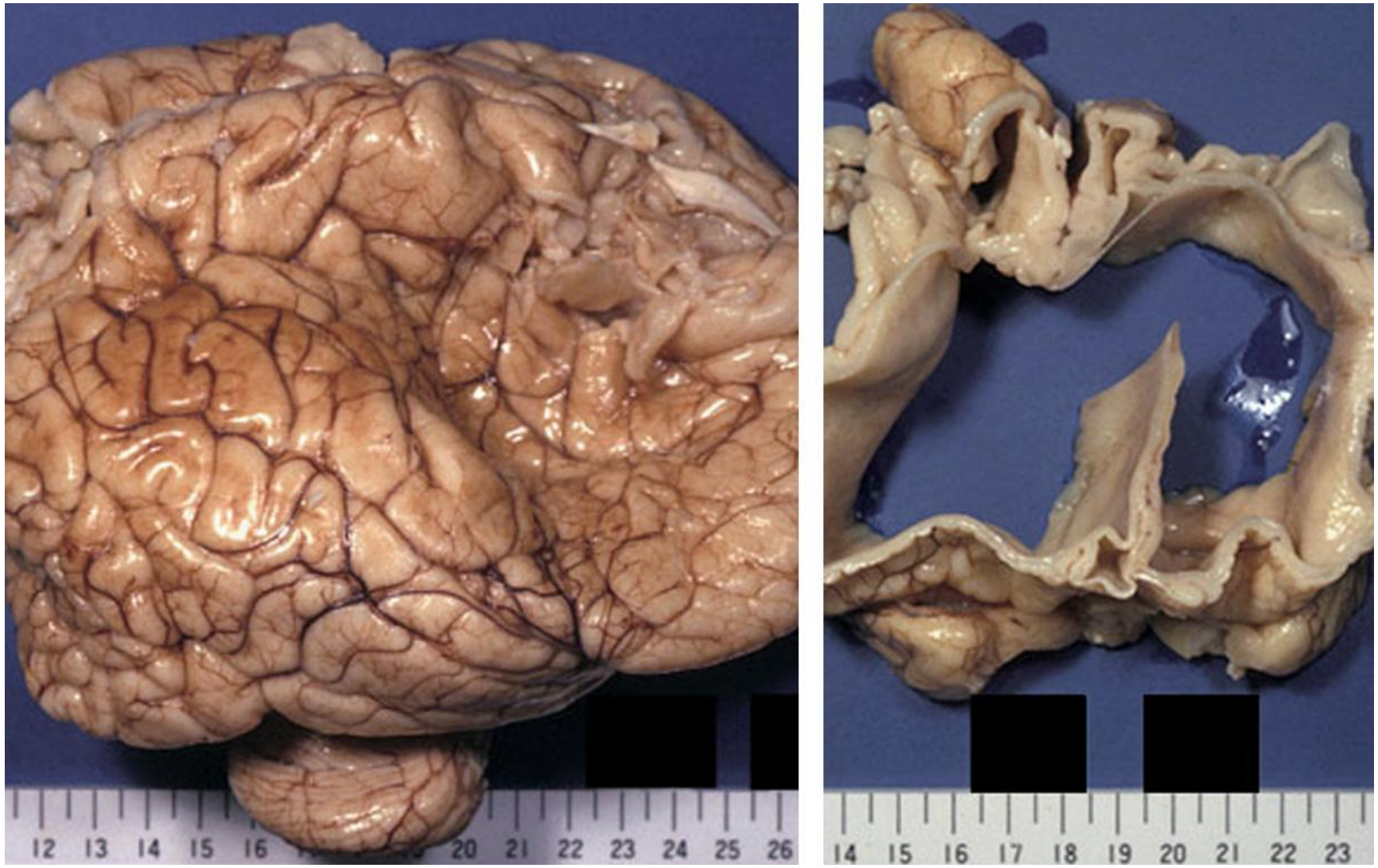
Streptococcus pneumoniae-induced purulent meningitis, disseminated from lumbar epidural abscess. H&E



Klebsiella pneumoniae-induced purulent meningitis.
Note bacillary colonies outside neutrophils. H&E-1



Klebsiella pneumoniae-induced purulent meningitis. Note bacillary colonies outside neutrophils. Large-sized bacilli are negative with Gram stain. H&E-2



Hydrocephalus in a newborn baby at autopsy. The patient suffered from neonatal meningitis caused by *Flavobacterium meningosepticum*. *F. meningosepticum* is an opportunistic pathogen resistant to antimicrobial agents used to treat gram-negative bacilli.