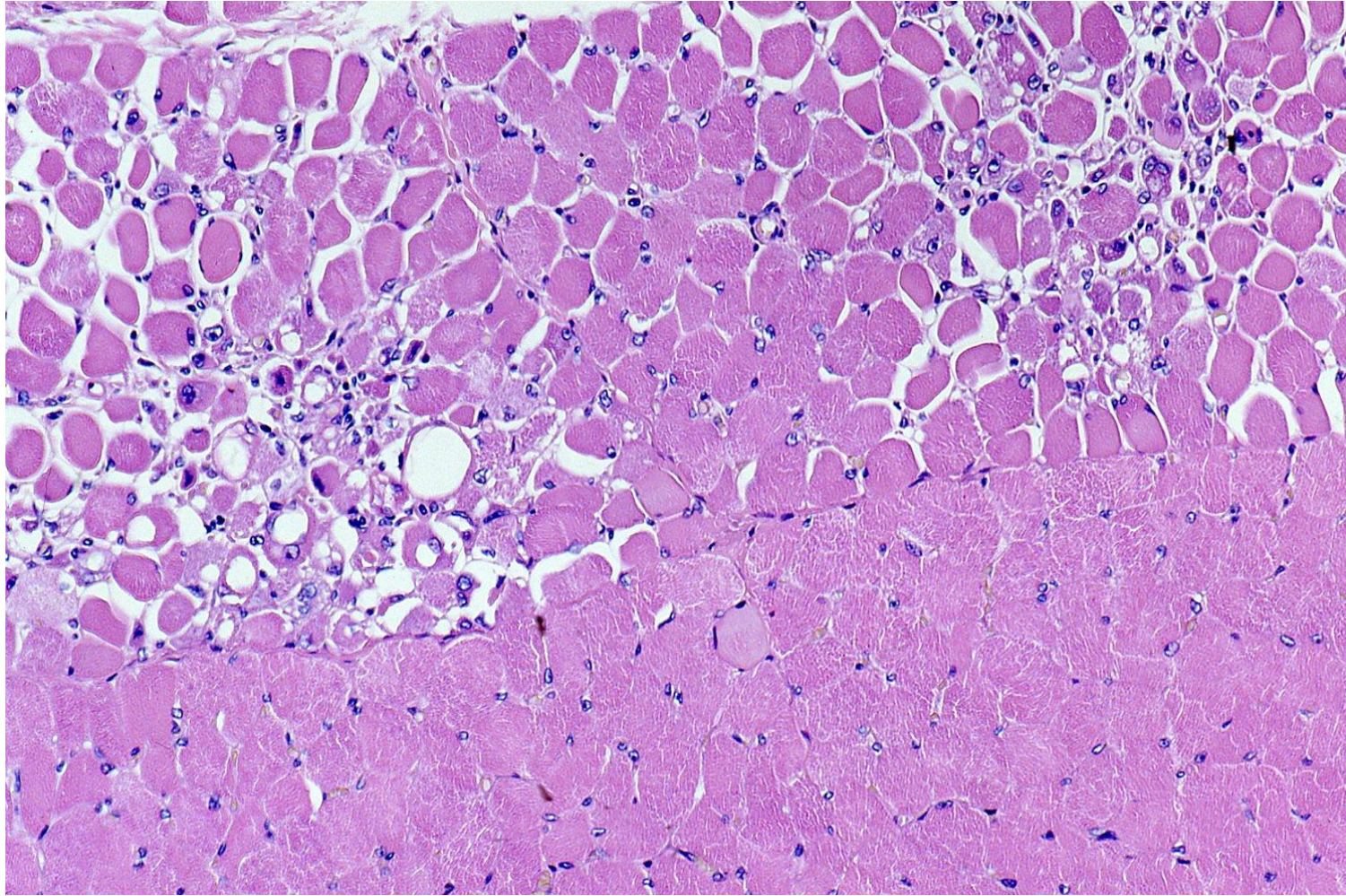


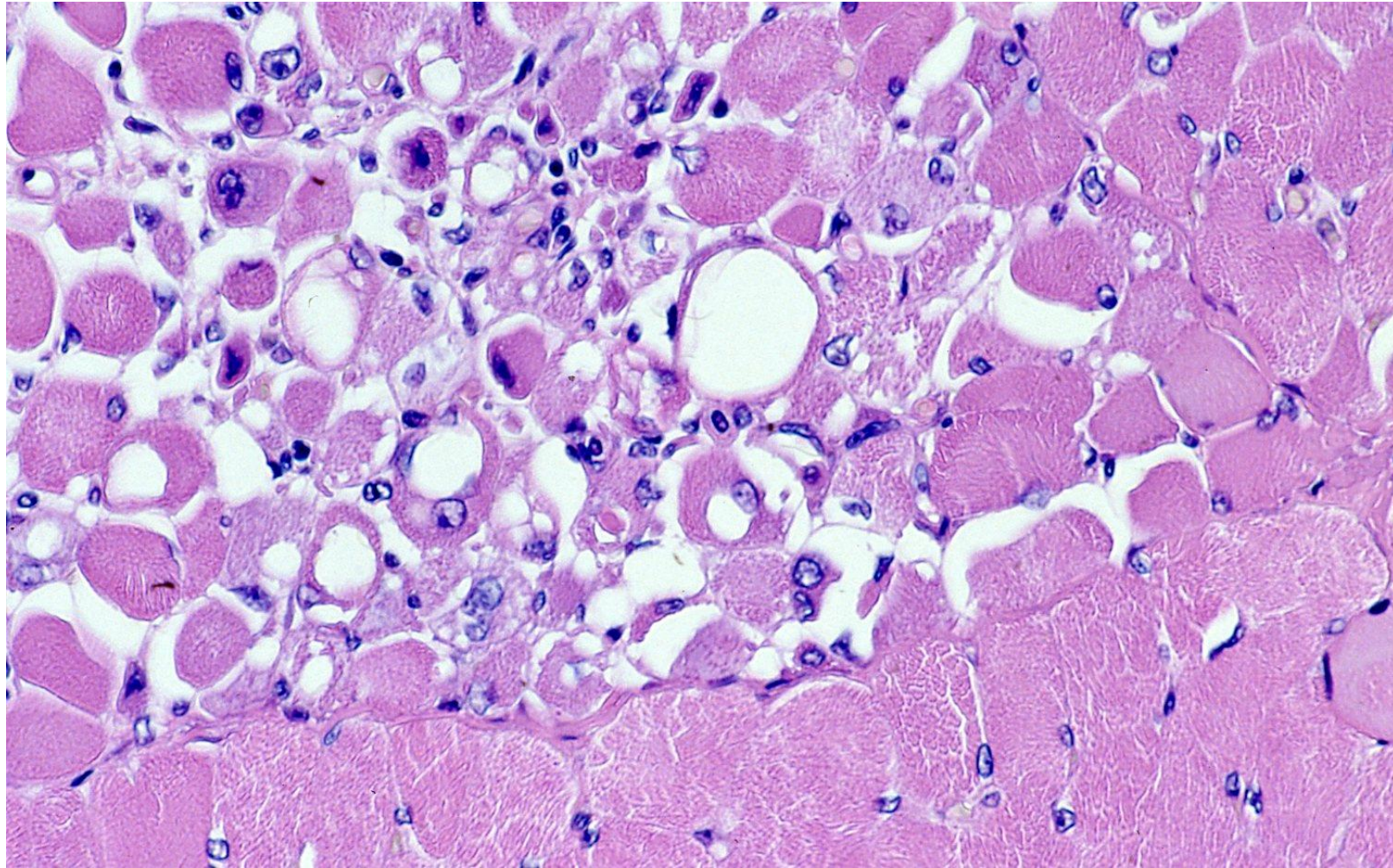
Tetanus

Tetanus is caused by skin infection of *Clostridium tetani* and characterized by muscle spasms. The spasms begin in the jaw, and progress to the rest of the body. Each spasm lasts for a few minutes. The latent period is 3-21 days. *C. tetani* is found in soil, dust and manure. Cut or puncture wound of the skin may allow the entrance of the bacteria. Tetanus can be prevented by immunization with the tetanus toxoid vaccine. Tetanus neurotoxin (tetanospasmin) binds to the presynaptic membrane of the neuromuscular junction, and is transported back through the axon to reach the motor neurons in the spinal cord via endocytosis. In the neuronal cytosol, it cleaves vesicle associated membrane protein synaptobrevin, which is necessary for membrane fusion of small synaptic vesicles. Tetanospasmin specifically blocks the release of neurotransmitters (GABA and glycine) from inhibitory neurons. The lack of inhibitory neurotransmitters leads to muscle spasms.

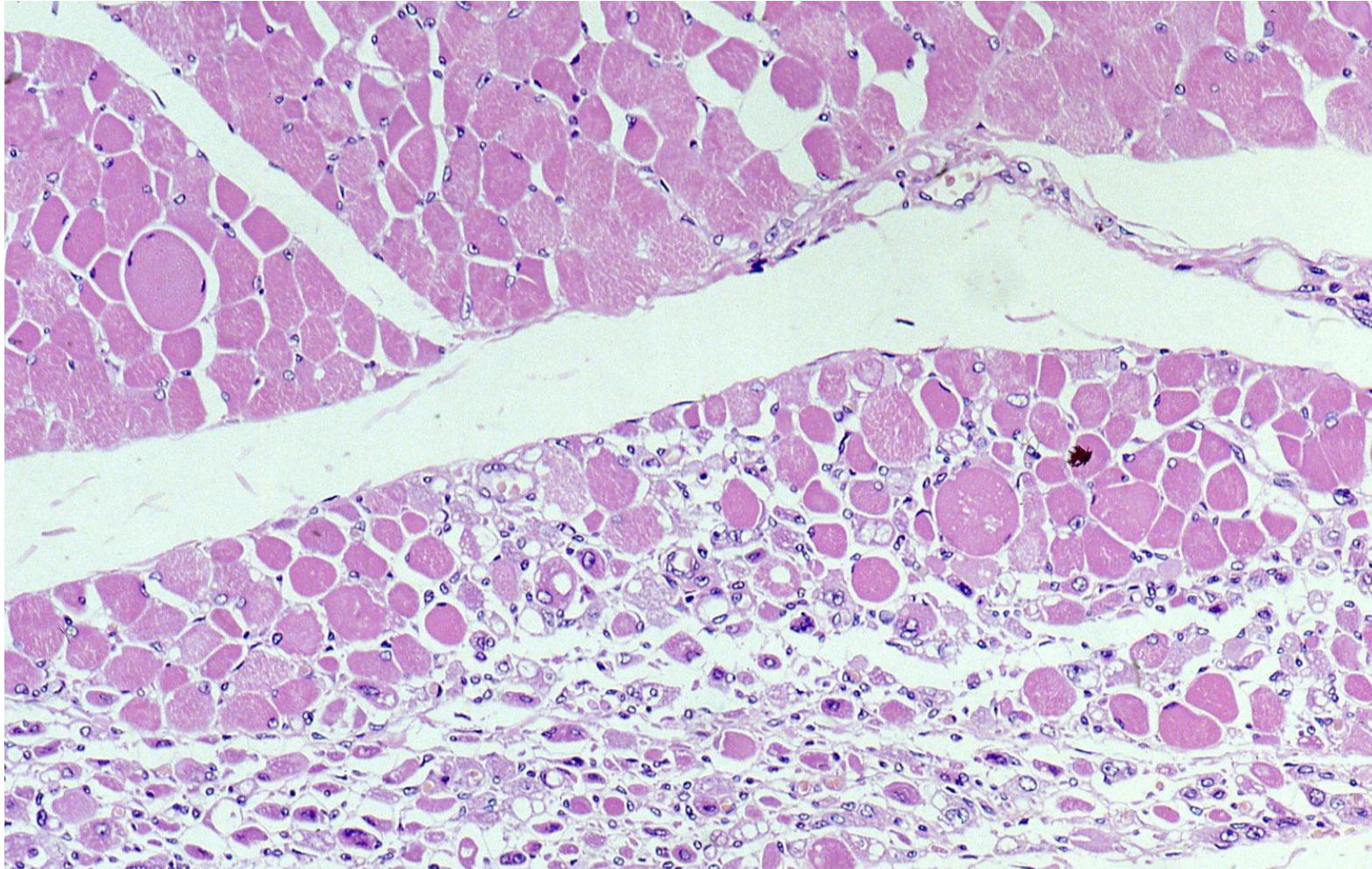
A 7-year-old boy had a traffic accident to receive deep and contaminated trauma in his leg. Nine days later, trismus and dysphagia occurred. In the 3rd day of hospitalization, opisthotonos and systemic spasms followed. He expired from repeated spasms and respiratory failure.



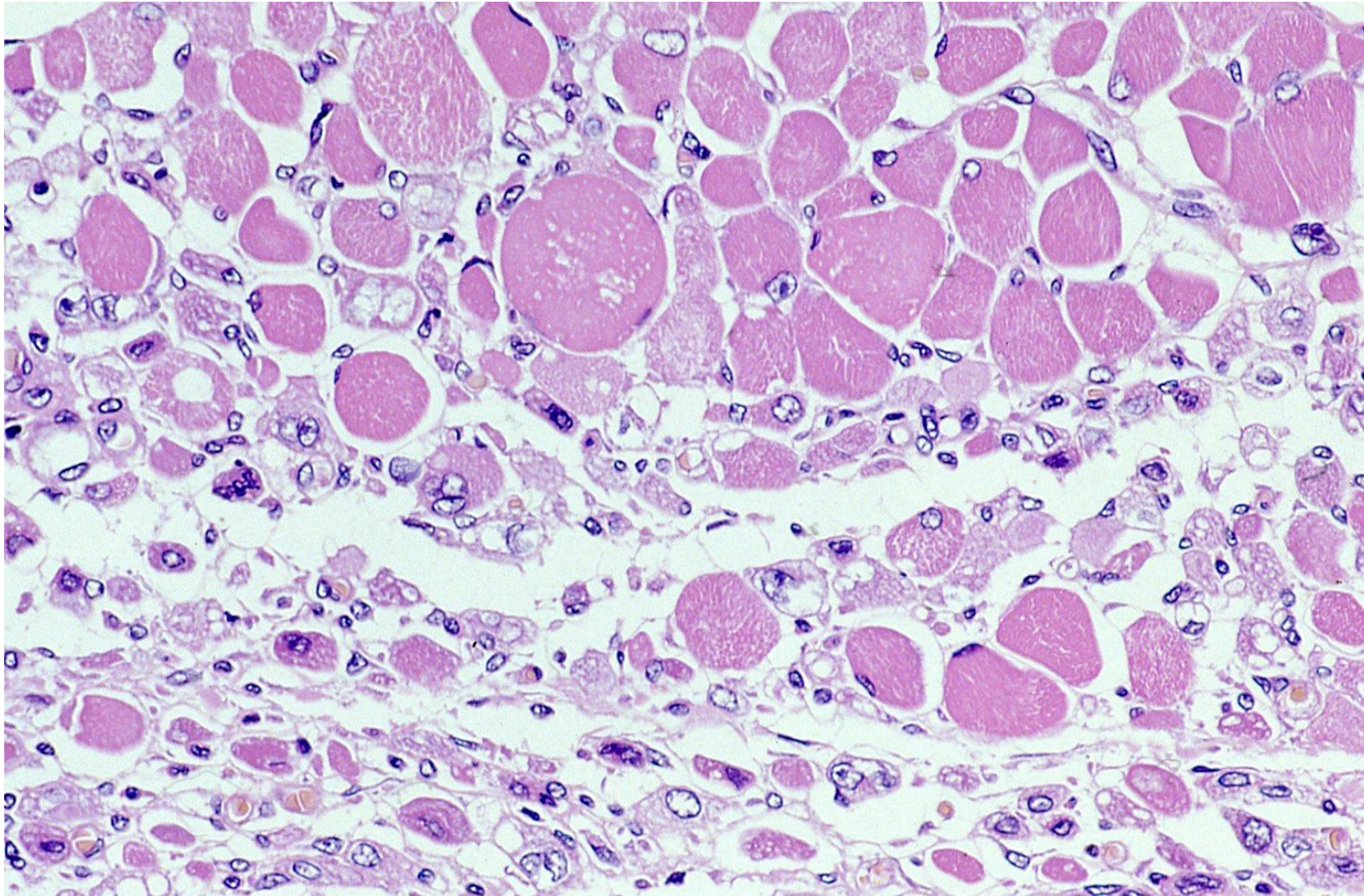
At autopsy, striated muscles show regenerative features with small-sized fibers and enlarged nuclei. Cytoplasmic vacuolation is associated. A neurogenic grouping pattern is recognized. No inflammatory change is noted. H&E-1



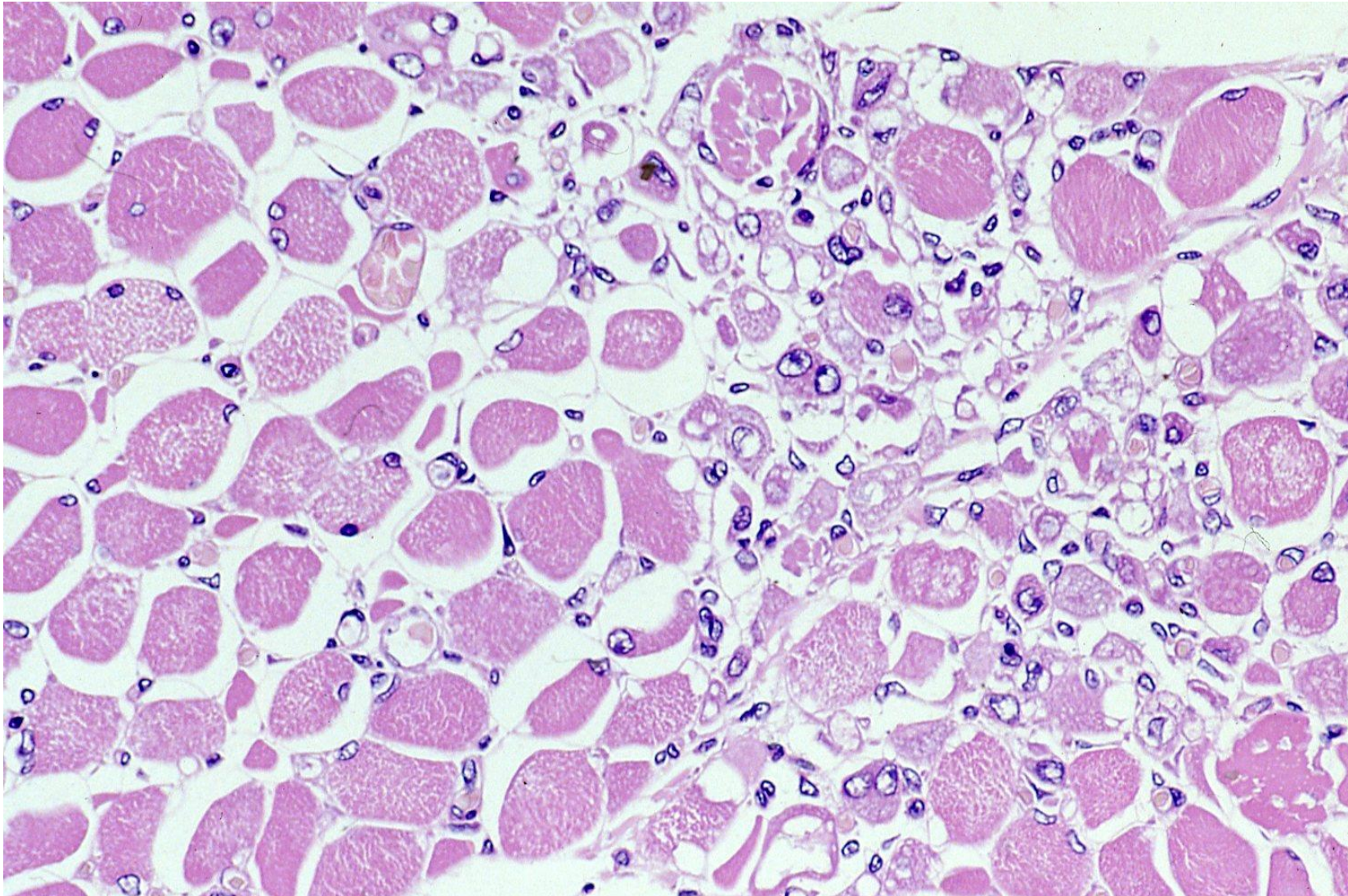
At autopsy, striated muscles show regenerative features with small-sized fibers and enlarged nuclei. Cytoplasmic vacuolation is associated. A neurogenic grouping pattern is recognized. No inflammatory change is noted. H&E-2



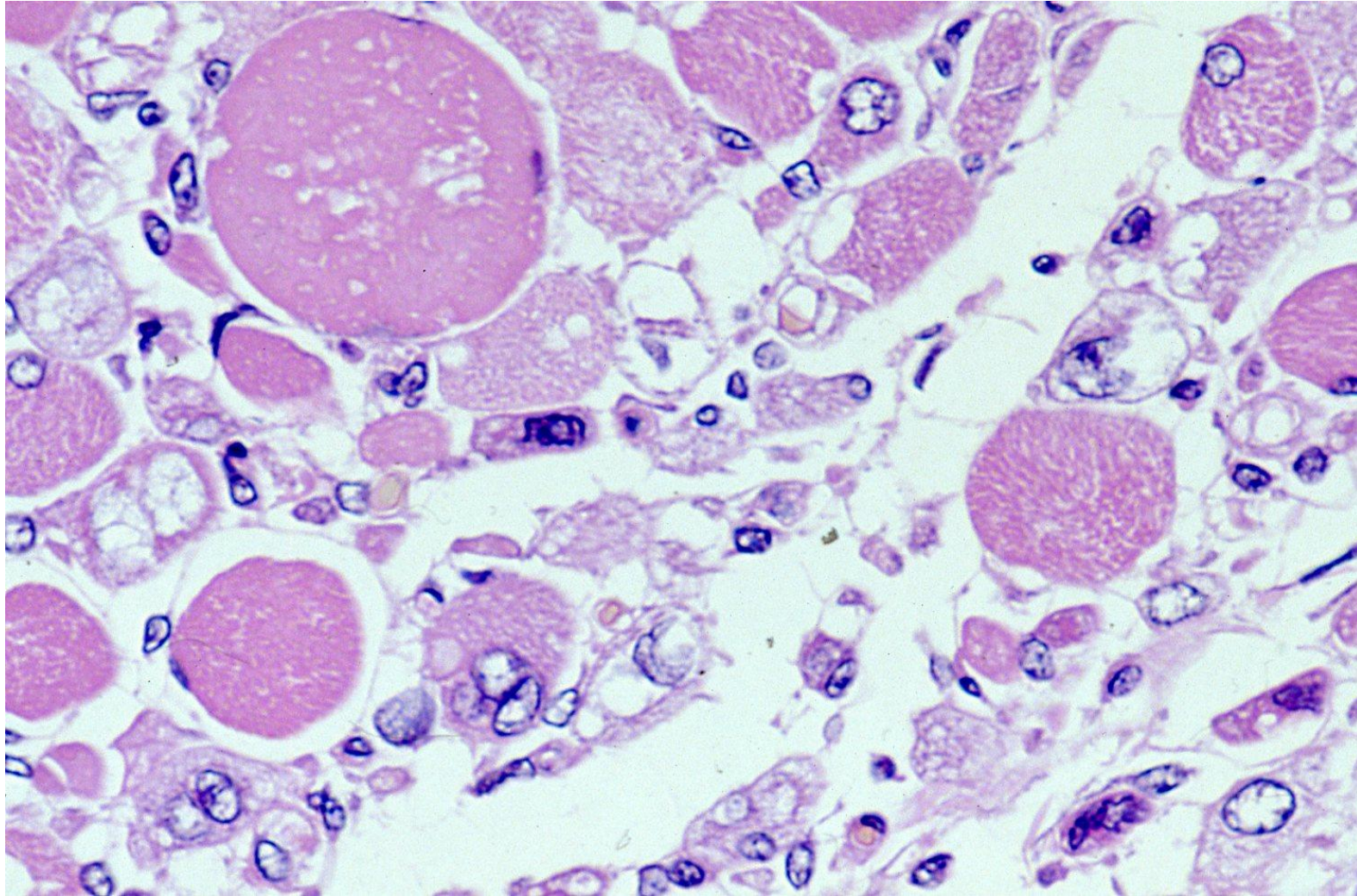
At autopsy, striated muscles show regenerative features with small-sized fibers and enlarged nuclei. Cytoplasmic vacuolation is associated. A neurogenic grouping pattern is recognized. No inflammatory change is noted. H&E-3



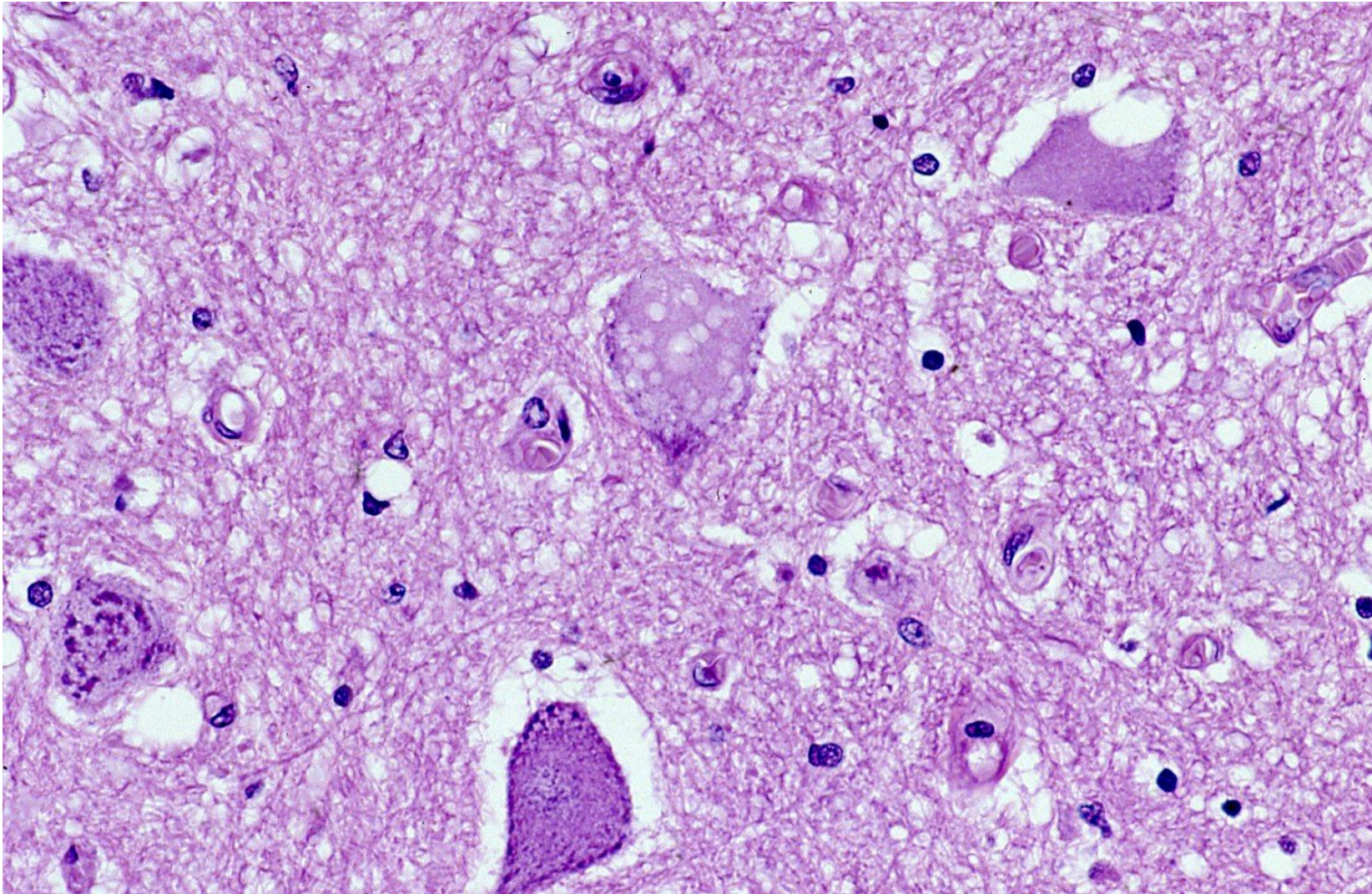
At autopsy, striated muscles show regenerative features with small-sized fibers and enlarged nuclei. Cytoplasmic vacuolation is associated. A neurogenic grouping pattern is recognized. No inflammatory change is noted. H&E-4



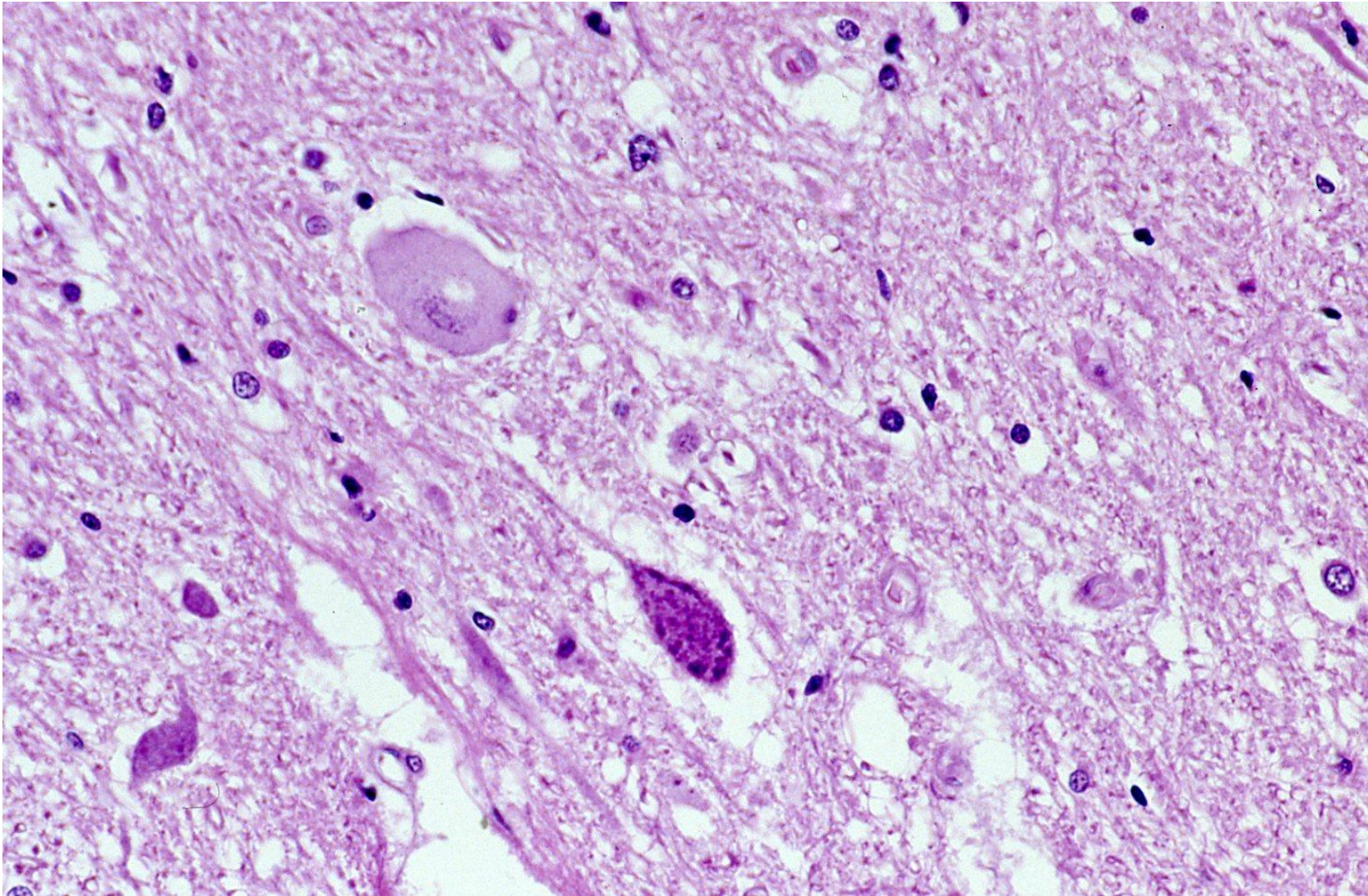
At autopsy, striated muscles show regenerative features with small-sized fibers and enlarged nuclei. Cytoplasmic vacuolation is associated. A neurogenic grouping pattern is recognized. No inflammatory change is noted. H&E-5



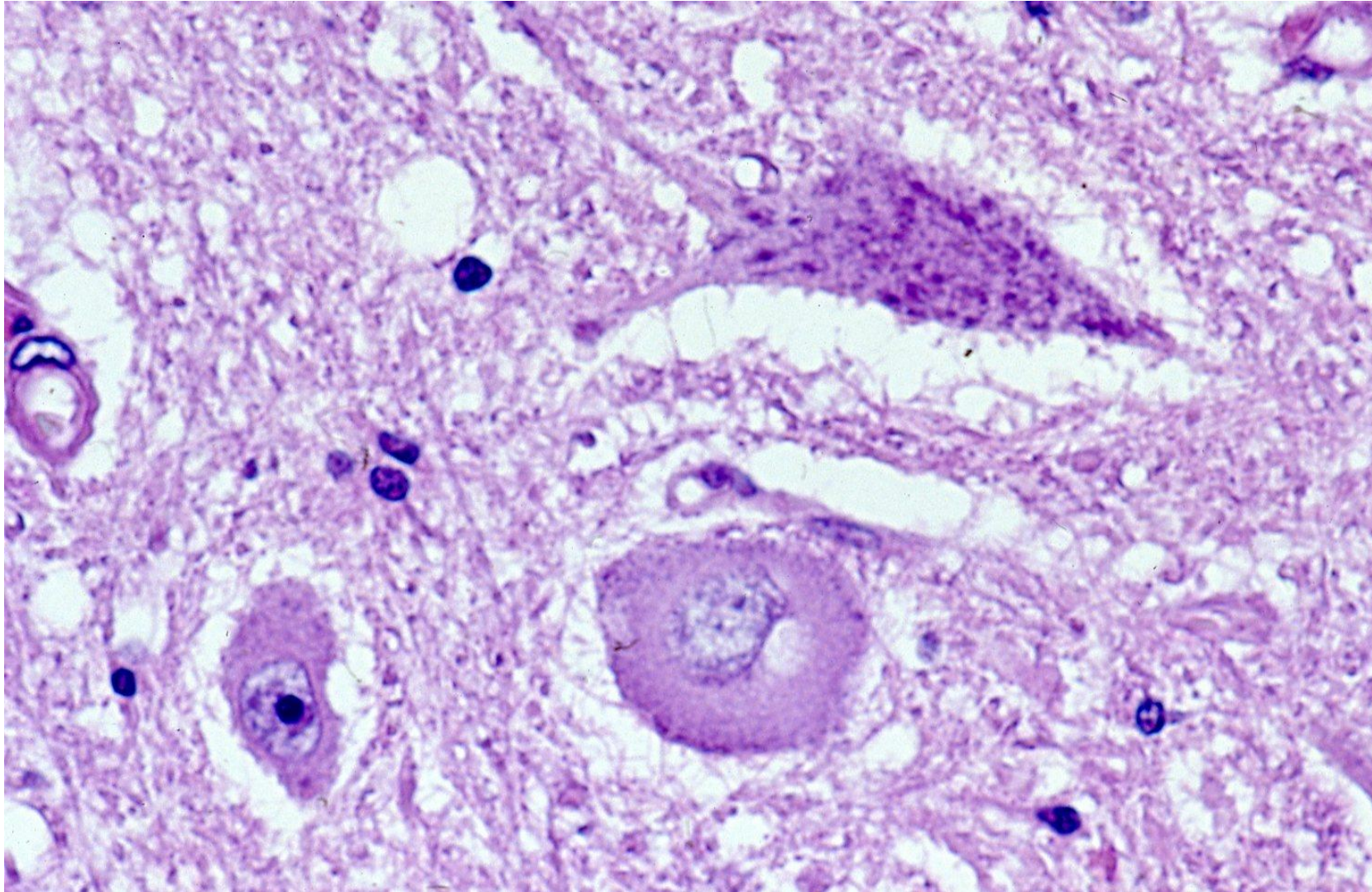
At autopsy, striated muscles show regenerative features with small-sized fibers and enlarged nuclei. Cytoplasmic vacuolation is associated. A neurogenic grouping pattern is recognized. No inflammatory change is noted. H&E-6



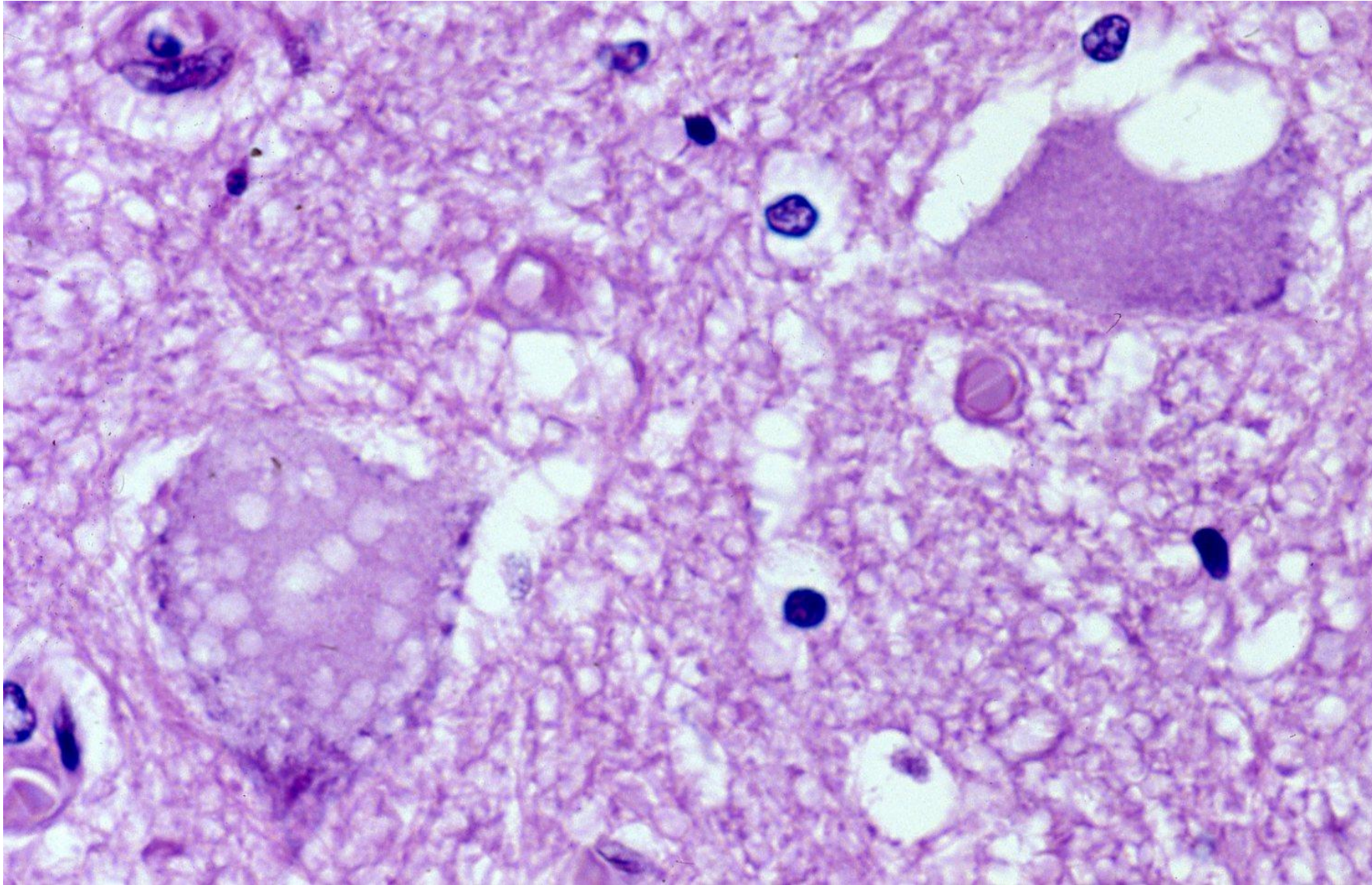
At autopsy, motor neurons in the anterior horn of the spinal cord show cytoplasmic vacuolar change and central chromatolysis. H&E-7



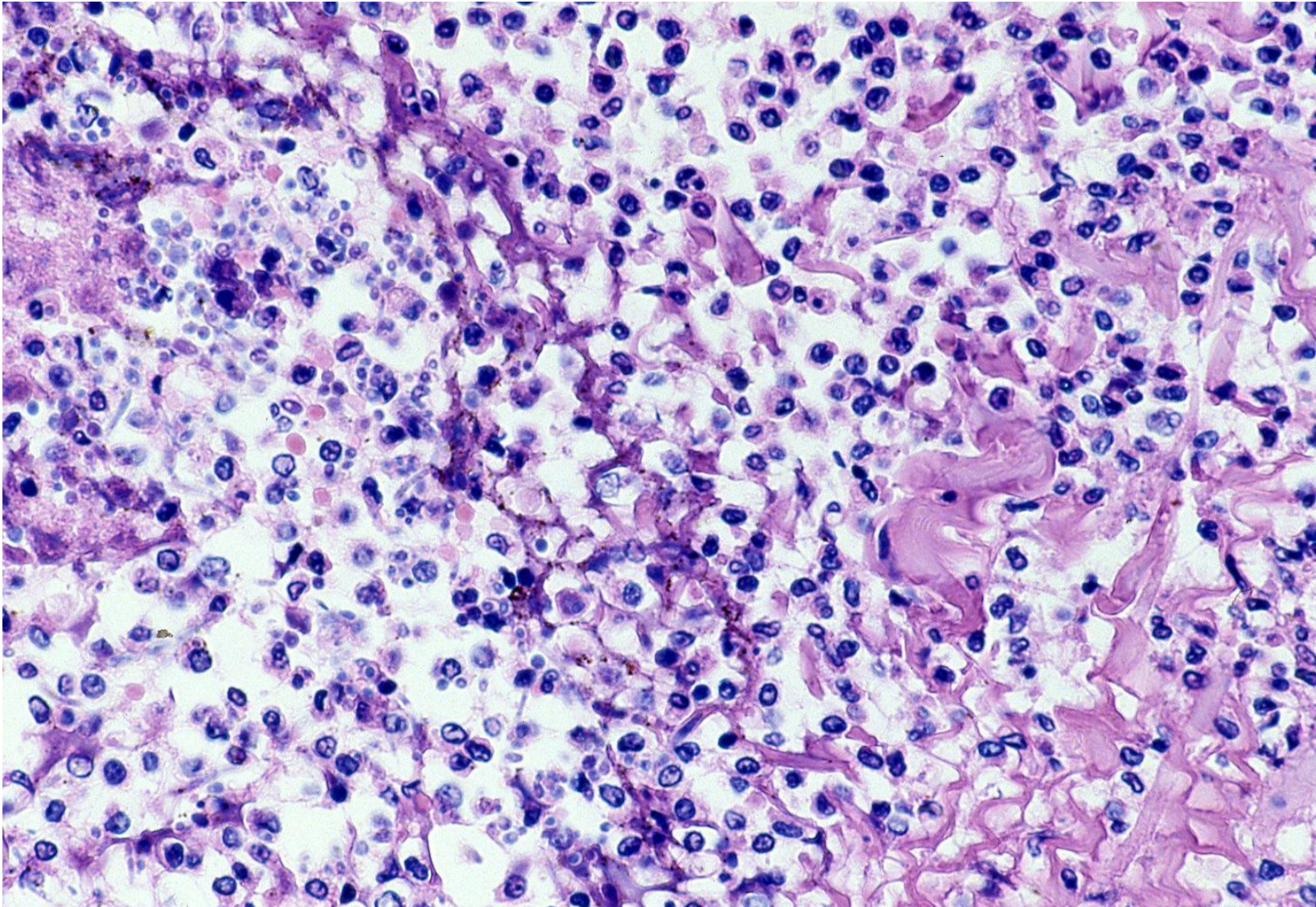
At autopsy, motor neurons in the anterior horn of the spinal cord show cytoplasmic vacuolar change and central chromatolysis. H&E-8



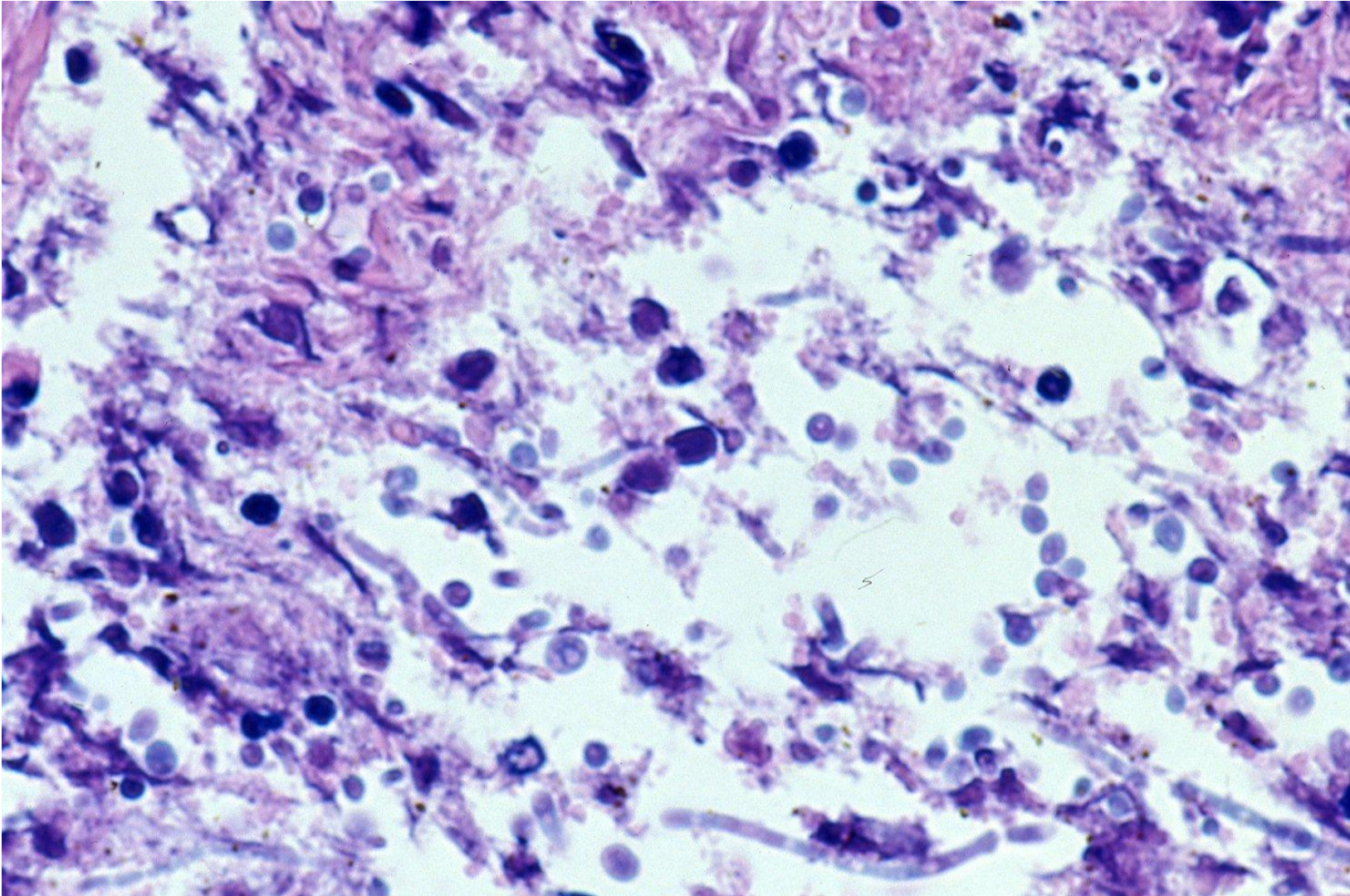
At autopsy, motor neurons in the anterior horn of the spinal cord show cytoplasmic vacuolar change and central chromatolysis. H&E-9



At autopsy, motor neurons in the anterior horn of the spinal cord show cytoplasmic vacuolar change and central chromatolysis. H&E-10



At autopsy, the skin wound shows co-infection of *Candida albicans*. For the growth of obligatory anaerobic *C. tetani*, co-infection of facultative anaerobic or aerophilic microbiota is necessary. H&E-11



At autopsy, the skin wound shows co-infection of *Candida albicans*. For the growth of obligatory anaerobic *C. tetani*, co-infection of facultative anaerobic or aerophilic microbiota is necessary. H&E-12