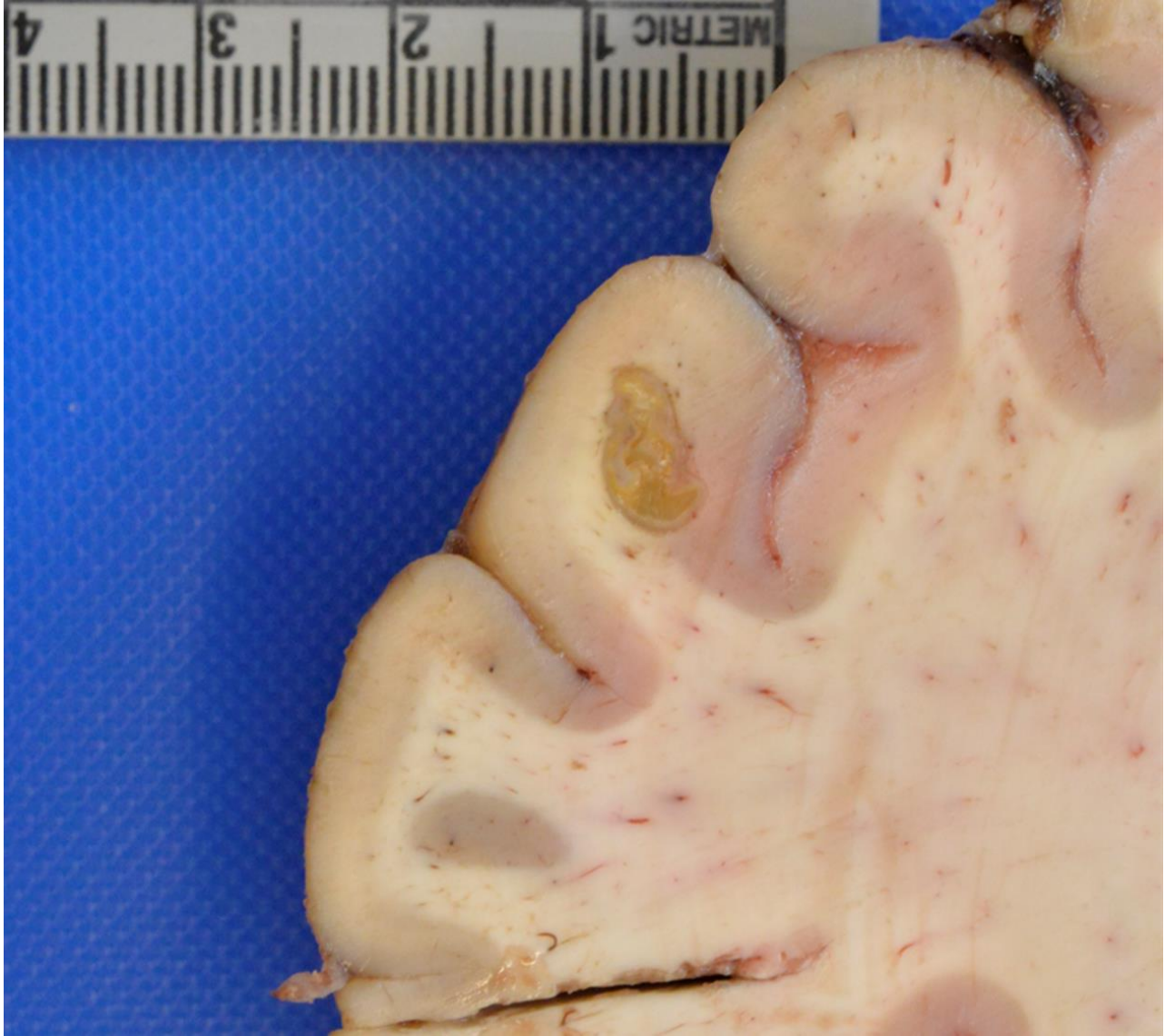
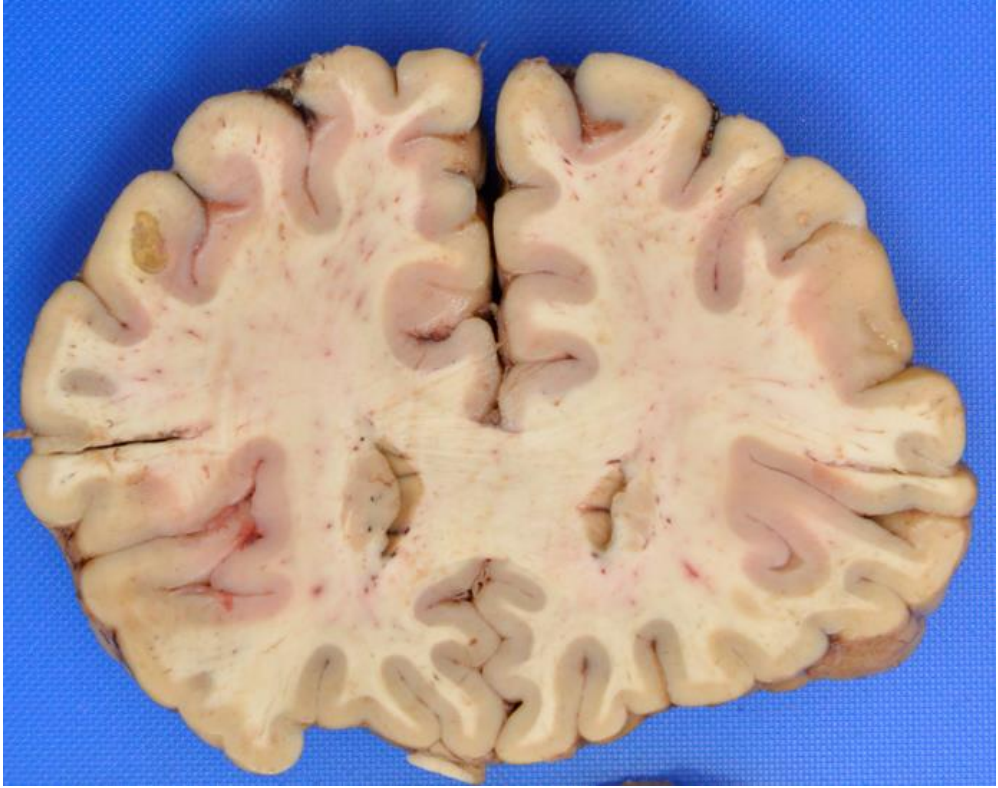


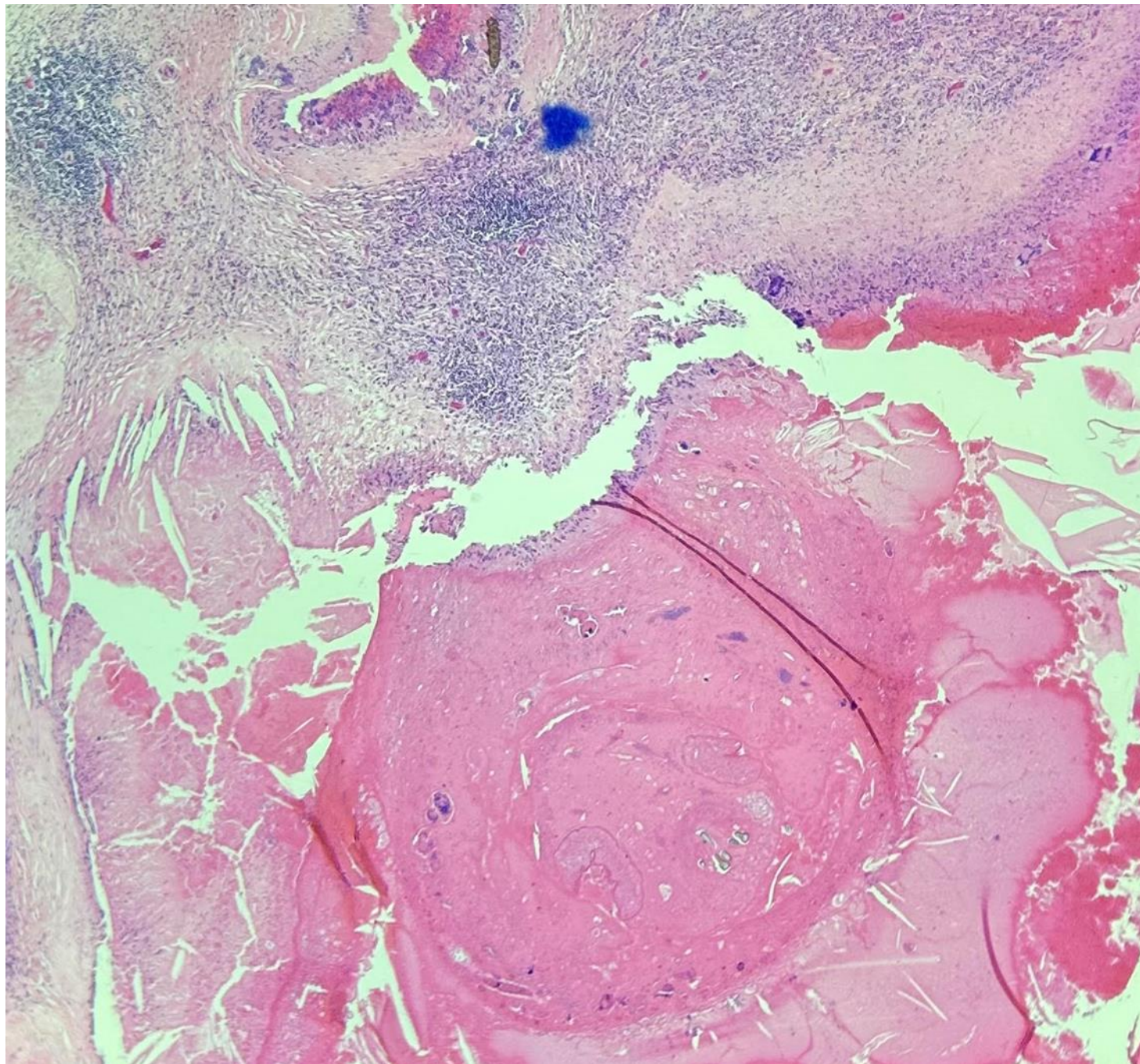


Case #62

NAME Educational Activities Committee

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1. A 34-year-old man with a history of seizures was found dead in his bedroom. At autopsy, a lesion was identified in his frontal cortex (see images below). Which of the following is most likely?

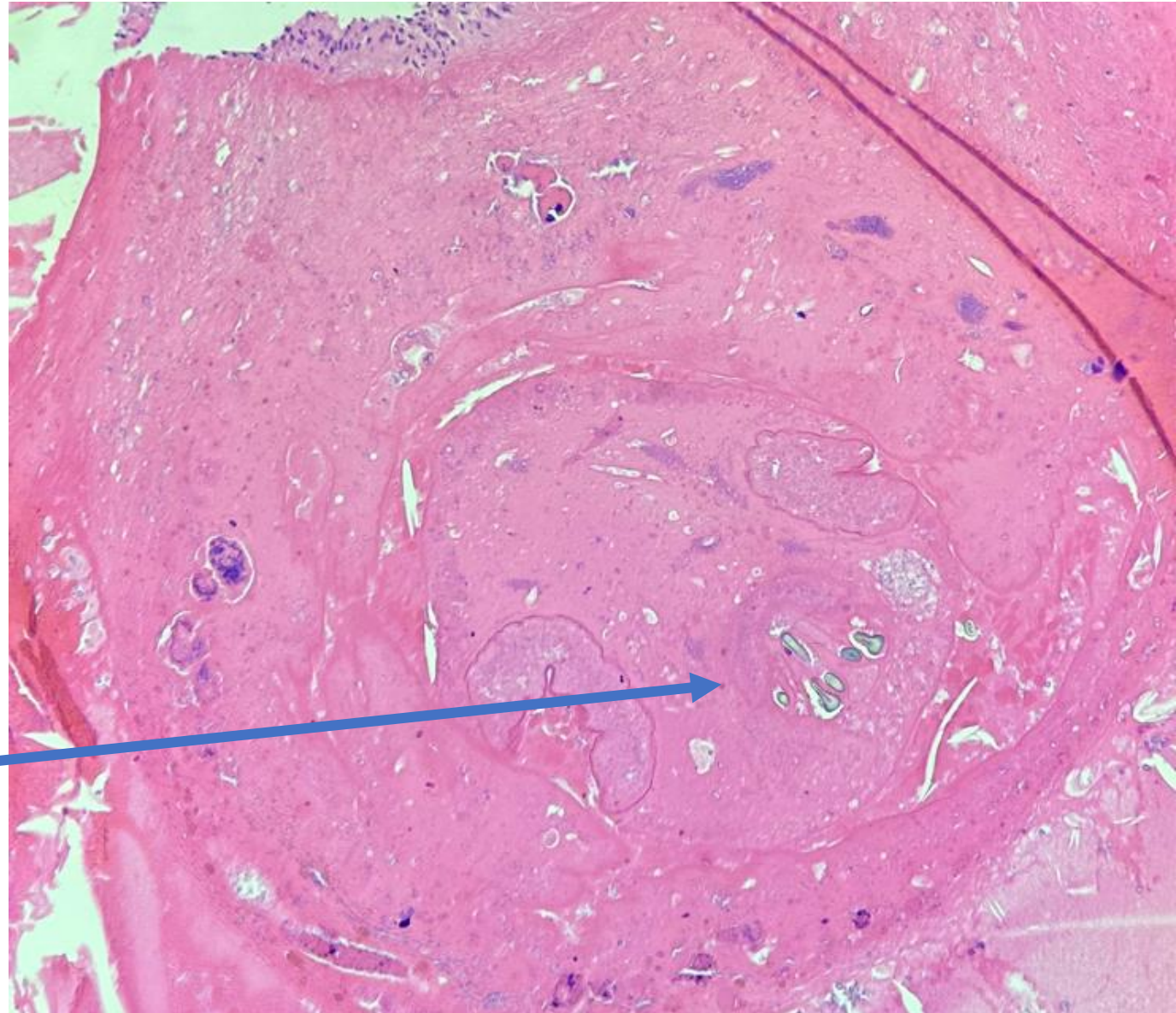
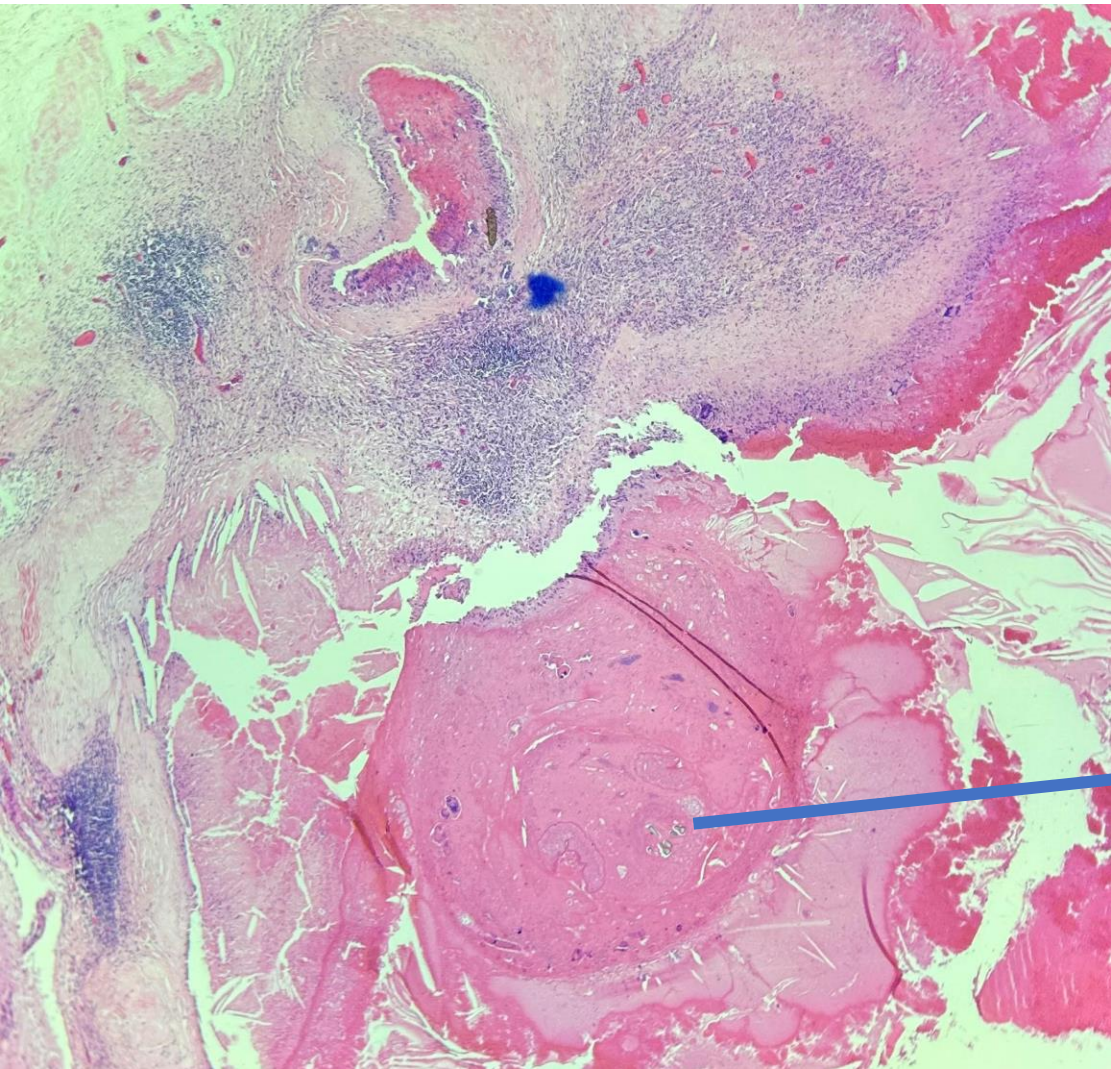
- He was shot in the head several years ago.
- He had an undiagnosed autoimmune inflammatory demyelinating disease.
- He had a left-sided native valve infective endocarditis.
- He ate undercooked meat.
- He had an undiagnosed HIV infection.

Answer...

D. He ate undercooked meat (Correct answer, 68.8% responses)

Correct answer. The findings in this brain are consistent with neurocysticercosis. Cysticercosis is an infection caused by the larvae of the parasite *Taenia solium*. Humans can be infected when they swallow tapeworm eggs contaminated food (generally pork) or water, by direct contact with another infected individual, or by self-infection (bad hygiene). Grossly, the brain showed multiple cystic (viable) to calcific (late stage) lesions in both the gray and white matter. Microscopically, in the larval stage, cysts may show a scolex with hooklets and 2 pairs of suckers. In the colloidal stage (first stage of involution), the scolex shows signs of hyaline degeneration. In the granular stage (late stage) the cysticercus is no longer viable; cyst wall thickens and the scolex is transformed into coarse mineralized granules. A granulomatous reaction eventually develops.

In the presented case, multiple degenerated cysts with extensive calcification were observed. Residual involuted parasite parts can still be seen in the histology image.



Degenerated scolex and hooklets

Other answers:

A. He was shot to the head several years ago (4.41%)

Incorrect answer. In normal soft tissues, a retained bullet or fragments results in the formation of a thick fibrous capsule surrounding the foreign body. In the brain, there is usually not such a fibrous response, but there would be focal softening surrounding a fragment, with gliosis and rarefaction along the wound tract.

B. He had an undiagnosed autoimmune inflammatory demyelinating disease (8.52%)

Incorrect answer. Multiple sclerosis is an autoimmune inflammatory disease of the central nervous system (CNS) which results in demyelination. The pathologic hallmark of MS consists of focal demyelinated plaques within the CNS, with variable degrees of inflammation, gliosis, and neurodegeneration. Grossly, the affected brain shows multifocal demyelination plaques in the white matter of the brain and spinal cord, frequently located adjacent to lateral ventricles in the cerebral hemispheres.

C. He had a left-sided native valve infective endocarditis (12.18%)

Incorrect answer. Infective endocarditis of the left-sided cardiac valve may result in septic emboli in the brain (microabscesses). They are seen in approximately 1–7% of infective endocarditis, and usually present as a solitary lesion. Microscopically, septic emboli can be found within the lumen of cerebral vessels, and the brain abscess is composed of neutrophil-rich exudate with or without other inflammatory cells.

E. He had a history of undiagnosed HIV infection (6.09%)

Incorrect answer. Toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii* and is always in the differential diagnosis of brain lesions. It is generally seen in HIV-infected subjects as a complication of the late phase of the disease. Humans can be infected by eating undercooked contaminated meat or shellfish, drinking contaminated water, being in contact with cat feces, and congenital transmission. Grossly, the brain generally shows multiple necrotic-appearing mass lesions, while microscopy demonstrates acute inflammation, necrosis and parasitic cysts that contain bradyzoites.

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