

# Teaching NeuroImages: Cerebral syphilitic gumma with numerous spirochetes in immunohistochemical staining

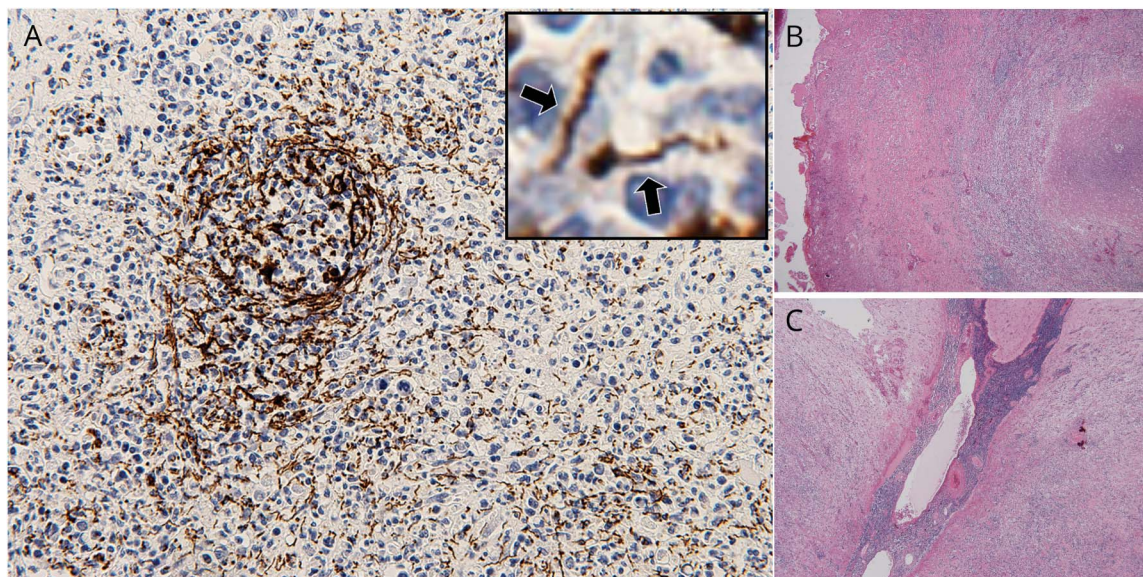
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**Figure 1** Pathologic images



(A) Immunostaining using anti-*Treponema pallidum* antibody demonstrates numerous perivascular spirochetes (original magnification  $\times 40$ ). (B, C) Hematoxylin & eosin staining reveals gumma, composed of granulation tissue and massive necrosis accompanied by marked inflammatory cell infiltration, and meningitis with numerous lymphoplasmacytes accompanied by some occluded vessels (original magnification: B  $\times 2.5$ , C  $\times 4$ ).

A 62-year-old HIV-negative man without any relevant medical history had extramarital sex once 3 years before admission. A malignant tumor-like lesion was found on brain MRI when he came to our clinic with headache (figures 1 and 2). We removed the tumor and immunohistochemical staining revealed numerous spirochetes. Postoperative antibacterial agent therapy significantly diminished the edematous lesion. The initial 155.6-fold higher serum rapid plasma reagin (RPR), 40,960-fold higher *Treponema pallidum* hemagglutination, 1,280-fold higher fluorescent treponemal antibody absorption test, and 2.2-fold higher CSF RPR levels gradually decreased over 6 months. Cerebral syphilitic gumma usually occurs  $>10$  years after contracting syphilis.<sup>1</sup> Although it is difficult to detect single spirochetes with immunohistochemical staining,<sup>2</sup> aggressive cases may exhibit many spirochetes.

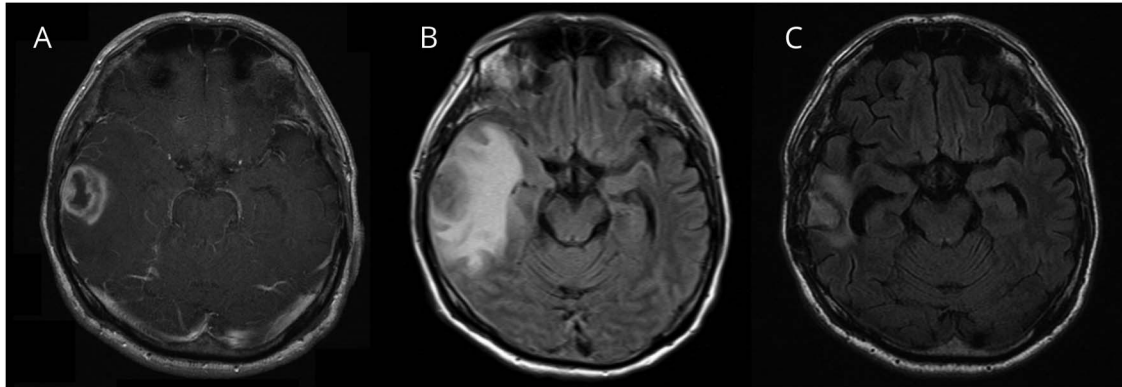
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(A) Axial enhanced T1-weighted image and (B) fluid-attenuated inversion recovery image reveal ring-enhanced lesion with substantial edema at the right temporal lobe. (C) Three months after tumor removal and postoperative antibacterial therapy (penicillin G 6,000,000 U/d for 14 days and amoxicillin 4,000 mg/d for 14 days), the lesion shows substantial improvement.

### Author contributions

Yasuhiro Kuroi: main surgeon, describing manuscript. Shigeru Tani: assistant operator. Makoto Shibuya: pathologic examination and assessment. Hidetoshi Kasuya: assistant operator, critical revision of the manuscript for important intellectual content.

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### Disclosure

The authors report no disclosures relevant to the manuscript. Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures.

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