Cerebral gumma

Case report

WEN-ZERN HWANG, M.D., TAKEHI HASEGAWA, M.D., HARUHIDE ITO, M.D., TAKASHI SHIMOJI, M.D., AND SHINJIRO YAMAMOTO, M.D.

Department of Neurosurgery, School of Medicine, Kanazawa University, Kanazawa, Japan

A case of focal cerebral syphilitic gumma of the right temporal lobe is reported. Angiography showed moderate focal hypervascularity with stretched vessels, and irregularity of the vessel walls. Plain computerized tomography revealed an area of low density that enhanced strongly after intravenous administration of contrast medium.

KEY WORDS: cerebral gumma, angiography, computerized tomography, syphilis

Cerebral syphilitic gumma have been reported rarely during the last few decades. As a result, there are few descriptions of the radiological characteristics of this disease. Focal and diffuse neurosyphilis require different treatment, and differentiation between these two types may necessitate both angiography and computerized tomography (CT). A case with a focal cerebral gumma is presented to illustrate the angiographic and CT findings.

Case Report

This 39-year-old male gardener had a sudden general convulsion with loss of consciousness on June 30, 1983. He was brought to our neurosurgical clinic from a country hospital for treatment of a suspected intracranial tumor. Four years before this attack, he had suffered an episode of weakness and numbness of his left extremities but he recovered completely within 1 week.

Examination. On admission, examination revealed a left hemianopsia, bilateral perceptive deafness, with left-sided hyperreflexia, and a left pathological toe reflex. Pupil reactions were normal. No papilledema or abnormal dermatological findings were noted. The reactions for syphilis were positive in serum studies: a rapid plasma reagin (RPR) test showed 1:8; a fluorescent treponemal antibody absorption (FTA-ABS) test was positive; Treponema pallidum agglutination (TPA) test showed 1:640; and complement fixing reaction was 1:40. Cerebrospinal fluid (CSF) analysis for syphilis showed: RPR test 1:1; FTA-ABS test positive; TPA test 1:640; and complement fixing reaction 1:8. The CSF showed a slight pleocytosis (15/3 cells) and a marked increase of protein content (130 mg/dl). The results of the tuberculin test were not conclusive. Electroencephalography revealed an abnormal pattern over the right cerebral hemisphere, and a brain scan demonstrated an irregularly bordered accumulation of isotope in the right middle fossa.

Carotid angiography (Fig. 1) showed that the anterior choroidal artery was stretched and compressed medially and superiorly, with the middle cerebral artery displaced laterally. The vessel walls near the lesion were irregular. During the capillary phase, a small hypervascular area was seen. Vertebral angiography disclosed no abnormal findings. Computerized tomography (Fig. 2) showed a strongly enhancing mass in the right temporal lobe with an intense perifocal low-density area extending to the hypothalamus.

Operation. A right temporoparietal craniotomy was performed on July 21, 1983. With the aid of an operative microscope, a violet nodular mass, about 3 cm in diameter, was found. It was clearly separated from the neighboring tissue and was totally removed. Histological investigation confirmed the diagnosis of cerebral syphilitic gumma.

Postoperative Course. The patient recovered uneventfully, and his hemianopsia improved to a slight defect of the left visual field. He was given procaine.
penicillin 6 million units/day for 3 weeks. At the time of discharge 1 month postoperatively, the protein content in the CSF had decreased remarkably to a normal level and cellular content was within normal limits.

Pathological Examination. The pathological findings (Fig. 3) revealed many small areas of necrosis surrounded by inflammatory cells consisting mainly of lymphocytes. Plasma and giant cells were also seen. Hypervascularity was marked with perivascular infiltration in the peripheral area.

Discussion
Neurosyphilis has been divided into three groups: 1) asymptomatic; 2) meningeal and vascular, both diffuse and focal; and 3) parenchymatous. The symptoms of the diffuse meningeal and vascular type are caused by infection of the meninges and blood vessels and respond to penicillin therapy, but the symptoms of the focal form, or gumma, as with intracranial tumors, do not respond to antisyphilitic treatment, and should be treated by surgical removal.

The symptoms and signs of a localized cerebral gumma mimic those of other intracranial neoplasms and can be difficult to diagnose. Because of its clinical rarity, few radiological characteristics have been described either angiographically or on CT scanning.

Bianchi and Frera reported that the angiographic findings of cerebral gumma can be characterized by the appearance of slender and irregular vessels, but these are now recognized as nonspecific features of inflammatory processes. Tsai, et al., presented a case showing a focal hypervascularized lesion on angiography (confirmed by histology) as contrasted to the avascular lesion described by Obrador. Godt, et al., and Punt both described CT scans of cerebral gumma. Godt, et al., illustrated an anular enhancing mass without any perifocal edema, while Punt’s case had multiple enhancing lesions accompanied by intense cerebral edema. There were no angiograms or photomicrographs in these reports, so no further information could be obtained. Punt classified his case as a phlebitic form of meningo-vascular syphilis.

In the present case, the mass effect seen on angiography and CT scanning differentiated this focal cerebral gumma from the diffuse involvement of meningo-vascular syphilis, as discussed by Rabinov. The irregular-
Cerebral gumma

FIG. 3. Left: Photomicrograph showing many small areas of necrosis in the central part and hypervascularity in the peripheral area. H & E, x 40. Right: Photomicrograph showing lymphocytes, plasma cells, and giant cells. H & E, x 100.

ity of the arteries and veins supported the diagnosis of the classical form of cerebral gumma. Because the treatment of these entities is quite different, these subunits should be differentiated from each other and from other neoplasms. When dealing with suspected neurosyphilis, syphilitic investigations of both blood and CSF6,12 and both angiography and CT scanning should clarify the diagnosis.

References


Address reprint requests to: Wen-Zern Hwang, M.D., Department of Neurosurgery, School of Medicine, Kanazawa University, 13-1 Takaramachi, Kanazawa 920, Japan.