Intracranial Lipoma
Case Report
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The lipoma is one of the most frequent benign tumors in the human being; it occurs in almost every organ of the body, but it is extremely rare inside the skull (intracranial space). Most of the reported cases arise from the corpus callosum.9 Since the first description by Rokitansky in 1856, only 110 cases had been reported up to 1958.1

We have had an opportunity to observe and study a case of intracranial lipoma which presented some peculiarities.

Case Report
A 91-year-old white woman was admitted on March 25, 1968. The night before admission, her daughter had found her, unable to talk or move her right side, but able to "moan and groan." She also seemed to be very short of breath.

History. The patient had been deaf for 20 years. The uterus had been removed several years before.

Examination. She was an obese woman, lying motionless in bed; she did not respond to verbal orders, but constantly moaned. The pupils were small, but reactive, and she had bilateral cataracts. The general physical examination was normal for her age. The clinical impression was that she had suffered a cerebral vascular accident.

EKG showed auricular fibrillation consistent with left ventricular enlargement and strain. The chest x-ray showed increased density at the left base. There were 19,900 white blood cells with 80% segmented and 16% band forms. The hemoglobin was 12.2 gm. The blood urea nitrogen was 34 mg. %, the alkaline phosphatase 2.6 units, the blood sugar 209 mg. %, the serum glutamic oxaloacetic transaminase 180 units, and the lactic acid dehydrogenase 1400 units.

During the next few days the patient developed increased weakness of the legs; the left lower leg became cool and bluish-purple. The posterior tibial and pedal pulses were weaker on the left side, but palpable. She given vaso-dilators and anti-coagulants. There was clinical evidence of pulmonary edema. She died on April 7.

Postmortem Examination. Autopsy was performed 12 hours after death. The significant general findings were arteriosclerosis, multiple pulmonary infarcts, acute fibrinous pericarditis, nephrosclerosis, pyelonephritis and gangrene of the left leg.

The brain weighed 1300 gm. The gyri were slightly atrophic. The vessels of the circle of Willis were patent; there was only moderate arteriosclerosis. Coronal sections through the brain revealed a well-encapsulated yellowish tumor near the right insula and compressing the adjacent cortex and the region of the basal ganglia.

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Fig. 1. Yellow mass of the lipoma was found underneath the middle cerebral artery after retraction of the temporal lobe.

(Fig. 1). This lipomatous mass was outside the pia mater but beneath the branches of the middle cerebral artery; it measured 3×1 cm. Microscopic sections of the mass showed well-encapsulated, mature fat tissue with small areas of calcification in the capsule and adjacent brain cortex (Fig. 2).

There was also a small focus of hemorrhage, 2.5 cm. in diameter, over the anterior left parietal region. Microscopic section showed ischemic necrosis and recent hemorrhages. There was advanced arteriosclerosis.

Discussion
Lipomas in the cranial cavity have been known for about 100 years. Rokitansky described the first case, a lipoma of the corpus callosum, in 1856. Ewing mentioned that Virchow had observed 6 lipomas of the dura and ventricular ependyma.5 Cascino et al. found only 110 intracranial lipomas in the literature up to 1958.1 Cooper and Von Hagen indicated that the reported cases of lipoma of the corpus callosum totalled 65 in 1962.2

Lipomas of the brain have been observed in various locations, but chiefly on the surface of the corpus callosum.5 Other locations have been the base of the cerebrum, the brain stem and cerebellum, the roots of the cranial nerves,6 the ventral aspect of the diencephalic structures, the choroid plexus of the lateral ventricles, and the dorsal aspect of the mid-brain.2

Many of the tumors are small,4 no bigger than 2
cm. in diameter. The histologic pattern is mainly mature adipose tissue, with variable amounts of collagen. Infrequently they may contain muscle fibers and fibro-osseous tissue. Russell and Rubinstein observed small patches of leukopoiesis. Some lipomas have abundant vascularization.

The origin of intracranial lipomas is controversial. According to Ewing, they always arise from the pia. Some say that they are not tumors at all, but the general belief is that they are tumors. Cooper and Von Hagen suggested that intracranial lipomas, especially the lipomas of the corpus callosum, are congenital or developmental lesions.

There is no particular age or sex incidence. According to Cascino et al., the youngest known case was a 3-day-old child and the oldest was 75. Zettner and Netsky found that just over half of the cases are under the age of 31. Our patient seems to be the oldest case of intracranial lipoma so far described.

The main symptoms of intracranial lipoma have been generalized convulsions and mental changes. Relatively few show paralysis or paresis, but hydrocephalus, headache, personality disorder, and obesity have been recorded. Sometimes the tumor simulates a meningioma. Many cases show no symptoms at all.

The clinical diagnosis is difficult, although x-ray evidence may help considerably. Roukkula and Anttinen have outlined the radiologic criteria for the diagnosis of lipoma of the corpus callosum, as follows:

1. A midline lesion lying just above the corpus callosum.
2. A radiolucent area at the site of the tumor, especially in the lateral view.

Our patient had a left-sided hemiplegia and later paraplegia. The autopsy findings showed ischemic and hemorrhagic necrosis due to arteriosclerotic vascular disease in the left parietal region of the anterior portion. The lipoma was located over the right insula and was compressing the adjacent cortex. We therefore assume that the paraplegia was caused by both the lipoma and the arteriosclerotic vascular disease. The compression exerted by the lipoma may have been precipitated by the increased intracranial pressure originating from the hemorrhage on the left side.

There were some interesting laboratory findings. The serum transaminase was 180 units and the lactic acid dehydrogenase (LDH) was 1400 units. LDH activity has been shown to have diagnostic value in tissue necrosis and neoplasia. Our patient had multiple pulmonary infarcts. The elevation of LDH and bilirubin in the serum are important findings of pulmonary embolism. The acute fibrinous pericarditis may have played a secondary role in the elevation of the serum LDH.

Summary
We have reported the case of a 91-year-old woman with an asymptomatic lipoma of the insular region.

References