jnm/ CASE REPORT

LIPOMA OF THE CORPUS CALLOSUM

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A lipoma of the corpus callosum is presented with a positive radionuclide scan. Although a rare lesion, this diagnosis should be entertained with increased symmetrical anterior midline tracer activity. Most corpus callosum lesions will be malignant; however, a benign lipoma is an important consideration as the therapy would vary.

Lipoma of the corpus callosum is a rare intracranial tumor not previously described in the nuclear medicine literature. Originally described in 1856 by Rokitansky (*1*), fewer than 75 documented cases were reported in the world literature by 1965 (*2*).

CASE REPORT

The third admission to the Duke University Medical Center for this 12-year-old male was for evaluation of episodic abdominal pain of a 2–3 year duration. Neither nausea nor vomiting was associated with the episodes of pain occurring two to three times a day and lasting several minutes. The suspected diagnosis was visceral seizures.

He was a 6-lb, 12-oz product of a full-term pregnancy. At birth, a 4-cm swelling was noted protruding from the anterior fontanel. During the first 4 months of life the lesion increased to 5–6 cm in size.

At 4 months of age he was readmitted for excision of the midline lipoma involving the scalp. However, at surgery the lesion was pedunculated and extended to the right of the falx. There was a thin ridge of tissue attaching the outer portion of the mass to the corpus callosum. The pathology demonstrated a lipoma without malignant changes.

Postoperatively he did well; however, his developmental milestones were mildly delayed. At 7.5 years of age, his mental age was 6 years.

Physically, he was well developed and quite alert. The old surgical scar was present with slight widening of the calvarium at that point. The remainder of his physical exam was normal. Neurologically, he was intact although retarded.

A brain scan following the administration of 15 mCi ^{99m}Tc-pertechnetate was performed on a Raytheon dual 5-in. scanner. Faint increased tracer activity was present anteriorly and midline in position. The anterior view demonstrated the increased activity better than either lateral (Fig. 1).

Skull x-rays illustrated typical "comma"-shaped calcification with faint hyperlucency of a lipoma of the corpus callosum (Fig. 2). An EEG was normal as was a full battery of laboratory tests. An upper gastrointestinal series, barium enema, and gallbladder exam were also normal. The cause of the abdominal pain was thought to be functional in nature.

DISCUSSION

All previous reports on diagnostic methods for demonstrating lipoma of the corpus callosum are based on skull radiographic changes, angiographic, or pneumoencephalographic changes. A single posi-

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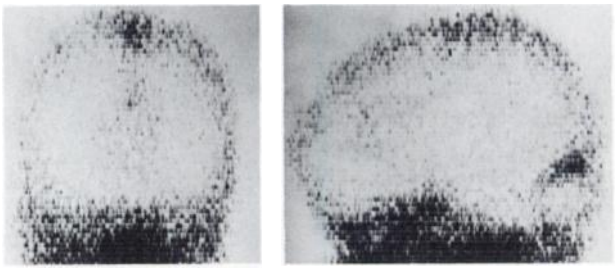

FIG. 1. Anterior and left lateral views of rectilinear scan demonstrating increased tracer activity in frontal midline region.

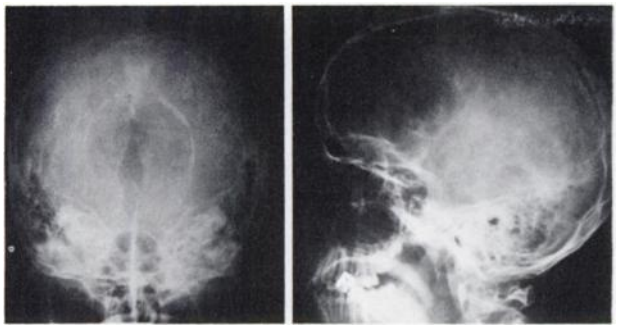

FIG. 2. Towne and lateral views of radiographs illustrating classical peripheral calcification with central radiolucency in corpus callosum lipoma.

tive brain scan is present in the literature in a recent report on angiographic findings (*3*). In a thorough report on corpus callosum involvement on brain scans, Ucmakli describes various lesions but does not present a lipoma case (*4*). The lesions discussed were malignant and it is necessary to emphasize that a benign lipoma can present a similar picture.

The midline location between the cerebral hemispheres lends the corpus callosum to scan evaluation. Bull submits that brain scanning is the most reliable diagnostic modality to demonstrate involvement of the corpus callosum since changes are often difficult to illustrate with pneumography and angiography (*5,6*).

A pure corpus callosal lesion probably produces no symptoms. Clinical evidence alone is insufficient to diagnose a lipoma of the corpus callosum (*7*). In a large series of tumors of the corpus callosum, mental symptoms predominated (*8*). Seizures may be present with lipomas of the corpus callosum but are more likely related to associated central nervous system abnormalities (*2*). In addition, a significant number of lipomas of the corpus callosum are associated with agenesis of this structure (*3,9*).

The most acceptable theory of etiology is that the lipoma is a developmental abnormality derived from the primitive menix. It occurs in the leptomeningeal cisterns and respects meningeal and neural structures (*2,7*).

Anatomically, the tumor lies on the dorsal surface of the corpus callosum but may replace the structure itself. Generally, the lipoma is located anteriorly, and the anterior cerebral arteries are usually incorporated into the lipoma. Peripheral calcification or ossification occurs frequently. No gross evidence of infiltration into brain tissue occurs and microscopically the lesion is composed of nonmalignant fatty tissue (*1,3,7,10,11*).

The radiographic diagnosis is usually made on routine skull films. A midline area of radiolucency in the region of the corpus callosum is present. Frequently, calcification is noted in the periphery of the lipoma. The calcification may be only faintly perceptible on the lateral view but seen as curvilinear deposits on the frontal view (Fig. 2) (*1,2,7,11,12*).

Angiography may demonstrate displacement of the anterior cerebral arteries or incorporation into the lipoma. These vessels may be enlarged with smaller branches extending into the hypervascular lipoma (*2,3*).

Pneumoencephalography will show separation of the lateral ventricles by the mass. Dilatation of the lateral ventricles with compression of the anterior horns may occur also (*1,2,12*). The third ventricle will vary in size and location depending chiefly on whether there is agenesis of the corpus callosum associated with the lipoma (*1,9*).

Increased midline tracer activity is detected best by brain scanning on the anterior view. In the case presented, this is symmetrical in appearance. On the lateral view, the area of increased activity is less well seen (Fig. 1). Because of the depth of the lesion and the low concentration of radionuclide, rectilinear scanning is preferable to scintiphotos.

Symmetrical corpus callosal tracer activity has been attributed to glioblastoma, astrocytomas, or metastatic malignant melanoma (*4*). This case shows that nonmalignant lesions can produce the "butterfly" pattern previously attributed to malignant involvement of the corpus callosum.

A diagnosis of lipoma of the corpus callosum is generally thought to be a contraindication to surgical intervention. The postoperative results are usually poor because of involvement of the anterior cerebral arteries (*2,10*).

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