Ectopic meningioma of a finger

Case report

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A case of an ectopic meningioma in a 67-year-old woman is presented. The tumor was located subcutaneously on the little finger of her right hand. Microscopic examination revealed a typical psammomatous meningioma with no signs of malignancy. The location of this tumor is most unusual, and theories regarding its histogenesis are briefly discussed. A neuroectodermal origin is suggested.

KEY WORDS · ectopic meningioma · subcutaneous meningioma · psammoma

Meningiomas are not commonly encountered outside the central nervous system, and then mainly in the craniofacial region. Subcutaneous meningiomas are even more exceptional, less than 50 having been reported since the first description by Winkler in 1904. With very few exceptions, they have been found in the facial and paravertebral regions only. This report describes a case of a histologically characteristic ectopic meningioma, located on the little finger of a 67-year-old woman.

Case Report

This 67-year-old woman was referred to the Department of Plastic Surgery, Rigshospitalet, Copenhagen, in September, 1981, complaining of a small tumor on the little finger of her right hand. The tumor had been present for 4 or 5 years. There was no history of trauma, but the swelling had become larger and increasingly tender over the preceding month.

Course. Physical examination disclosed a subcutaneous and freely movable mass, associated with an area of red and tender swelling, located radially and dorsally over the proximal part of the middle phalanx of the right fifth finger. X-ray films showed a calcified tumor measuring 1 x 0.5 x 0.5 cm, with no connection to the bone, and divided into four compartments. The tumor was excised under local anesthesia. No direct connection with nerves or blood vessels could be demonstrated.

Histopathological Examination. The tumor, which measured 12 x 8 x 3 mm, was embedded in paraffin after decalcification. Sections were stained with hematoxylin and eosin (H & E), periodic-acid-Schiff (PAS) with and without pretreatment with diastase, Congo red, van Gieson's, Bodian's, and Klüver's stains, Gordon and Sweet's method for reticulin, Masson's trichrome, and Lillie's method for melanin.

Microscopically, the well encapsulated nodules of the tumor (Fig. 1) were seen to have a homogeneous stroma consisting of elongated and rounded cells with indistinct outlines and eosinophilic cytoplasm (Fig. 2).
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The nuclei were round or oval with a homogeneous chromatin structure and without pleomorphism. No mitoses were observed. In some areas, the cells were arranged in whorls. Embedded in the stroma were numerous psammoma bodies of a rather uniform size (measuring up to about 60 μm in diameter), but varying in density (Fig. 3). A lamellated structure could be discerned, and the bodies had a PAS-positive, diastase-resistant matrix, but stained negatively with the van Gieson and trichrome stain for collagen. No double-refractile material was present. There was no inflammation. Some minor blood vessels were seen, but no peripheral nerves could be demonstrated. Special staining for melanin and amyloid was negative. The histological picture was judged to be that of a psammomatous meningioma.

Discussion

In 1974, Lopez, et al.,9 collected the earlier sporadic reports, and reviewed 25 cases of cutaneous meningiomas and related processes. Three separate types were postulated: Type I, primary cutaneous meningiomas, includes congenital lesions in the head, neck, and paravertebral regions of children and young adults; Type II, ectopic soft-tissue meningiomas, appears in adults along the course of cranial and spinal nerves; and Type III encompasses intracranial meningiomas invading or metastasizing to the skin. The origin of Types I and II was suggested as arachnoid cells displaced during embryogenesis.

Supporting this theory, arachnoid cell rests have been demonstrated in the sheaths of cranial nerves.3 Moreover, Lopez, et al.,9 classified as Type I two variant lesions which they considered to represent forms in transition toward meningoceles. Thus, in three cases they were able to demonstrate a rudimentary cystic cavity, or stalk, as well as meningotheelial proliferation, and these tumors were consequently subclassified as “latent or rudimentary meningoceles.” Seven cases, described as “acoelic meningeal hamartomas,” were less circumscribed but also exhibited less meningotheelial hyperplasia than the typical Type I cutaneous meningiomas.

More cases with peripheral localizations of subcutaneous meningiomas were reported, also in 1974, by Apatenko and Sementsov.1 They described two adults, with lesions on the front side of the trunk in one and

![Fig. 2. Higher-power photomicrograph of a cellular area with a few psammoma bodies. Cell outlines are indistinct. H & E, × 325.](image1)

![Fig. 3. Photomicrographs of the specimen. × 200. Left: Reticulin stain showing a conglomeration of fibers around numerous psammoma bodies. Right: The lamellated structure of the psammoma bodies is visible on PAS staining.](image2)
on the hand in the other. In addition, a recent paper describes a similar tumor on the hind leg of an old dog. Such reports, together with our own case, make the histogenesis proposed by Lopez, et al., unconvincing.

According to a theory put forward by Lever and Schaumburg-Lever, these tumors constitute a variety of nevi. This proposition is based on the finding of some atypical psammoma-like structures in an intra-dermal nevus, but their theory appears unlikely when one considers the subcutaneous localization of most of the lesions. In this context it may be noted that the ability to form psammoma bodies is an outstanding but not a pathognomonic feature of meningiomas. It is interesting that about two-thirds of the true subcutaneous variety seem to contain psammoma bodies, which are believed to express cellular degeneration, or to represent the formation of collagen by the tumor cells. Recent electron microscopic studies, however, indicate the existence of more than one type of psammoma body. In our case, the bodies did not stain positively for collagen, but their matrix was PAS-positive and diastase-resistant. Their presence may very well indicate a beginning of regression of the tumor, as no signs of active growth were found.

The typical, rather uniform, histological picture of subcutaneous meningiomas along with their uneven distribution speaks against the hypothesis of a soft-tissue tumor with an unusual metaplasia, as proposed by Smith, et al. Although the proof is not unequivocal, there is a general tendency to consider the leptomeninges as well as the neurilemma of peripheral nerves to be derived from the neural crest cells. Bain and Shnita have suggested previously that subcutaneous meningiomas may arise from the sheath cells of cutaneous nerves. If such a neuroectodermal origin is accepted, it seems to offer the best explanation of the morphology and distribution of subcutaneous meningiomas.

References

1. Apatenko AK, Sementsov PN: [Arachnoid endotheliomas (meningiomas, psammomas) of the skin.] Arkh Patol 36:34-42, 1974 (Rus)

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