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ORIGINAL ARTICLE

Ocular ultrasound findings in optic disk melanocytoma

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KEYWORDS
Melanocytoma;
Optic disk;
Ultrasound;
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Retina

Abstract
Purpose: To describe the echographic characteristics of optic disk melanocytoma using a high resolution 10–20 MHz ophthalmic ultrasound.
Methods: We conducted a 10-year retrospective review finding 9 cases with optic disk melanocytoma. The echographic studies were performed by the same experienced ophthalmologist. The form and density of the tumors were evaluated with B-scan ultrasound. Internal reflectivity and vascularity of the tumors were assessed with a standardized A-scan. Base (vertical and horizontal) and height of the tumor were obtained by using both ultrasounds AB modes.
Results: The mean age at diagnosis was 43.88 years. There was no evidence of abnormal tumor vascularization in any of the cases. Mean (SD) vertical measurement of the base was 2.53 mm (±1.47). Mean (SD) horizontal measurement of the base was 2.49 mm (±1.03). Mean height (SD) was 1.52 mm (±0.88). Of the assessable cases, 78% had high internal reflectivity, the remaining 22% had medium-high internal reflectivity. All tumors' internal structure was characteristically homogeneous. Mean follow-up was 33.6 months.
Conclusion: Melanocytomas are small, benign tumors that are highly assessable by ocular ultrasound when their elevation surpasses 0.5 mm. In our study, the internal reflectivity ranged from high to very high, unlike other malignancies such as choroidal melanoma which tend to present with low internal reflectivity. The avascularity of the tumor is a common finding. Ultrasound is a remarkable tool that helps detect benign characteristics in a pigmented optic disk tumor and helps establish a more reliable diagnosis.

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PALABRAS CLAVE
Melanocitoma;
Nervio óptico;
Ultrasonido;
Reflectividad interna;
Retina

Características ecográficas del melanocitoma de nervio óptico

Resumen
Objetivo: Describir las características ecográficas del melanocitoma de nervio óptico utilizando un ultrasonido oftálmico de alta resolución (10-20 Mhz).
Métodos: Serie de casos retrospectiva de 10 años. Se presentan 9 casos de melanocitoma de nervio óptico. El análisis ecográfico fue realizado por el mismo oftalmólogo experimentado. La morfología y la densidad de los tumores fueron evaluadas con ultrasonido modo B. La reflectividad interna y la vascularidad de los tumores se evaluaron con ultrasonido modo A. La base (en sus dimensiones vertical y horizontal) y la altura de los tumores se midieron utilizando ambos ultrasonidos modo AB.
Resultados: El promedio de edad al diagnóstico fue de 43.88 años. No hubo evidencia de vascularidad anormal en ningún caso. El promedio (DE) de la medición vertical de la base fue 2.53 mm (±1.47), la medición horizontal de la base fue 2.49 mm (±1.03), y la media de la altura tumoral fue 1.52 mm (±0.88). Del total de los casos, el 78% tuvo reflectividad interna alta y el 22% restante tuvo reflectividad interna media-alta. El 100% de los tumores tuvieron una estructura interna de características homogéneas. El promedio de seguimiento fue de 33.6 meses.
Conclusión: Los melanocitomas son tumores pequeños, benignos, que fácilmente pueden ser estudiados por ultrasonido ocular cuando su elevación sobrepasa los 0.5 mm. En nuestro estudio la reflectividad interna varió de alta a media-alta, a diferencia de otras afecciones malignas como el melanocitoma coroideo, que se presentan con una reflectividad interna baja. La avascularidad del melanocitoma es un hallazgo común. El ultrasonido es una gran herramienta que nos ayuda a detectar características benignas en un tumor pigmentado del nervio óptico, ayudándonos a establecer un diagnóstico más fiable.

Introduction

Melanocytoma is a benign and highly pigmented tumor that can emerge almost anywhere in the eye,[1] such as the orbit,[2–5] iris,[6–10] ciliary body,[11–18] choroid,[19–21] sclera,[22,23] conjunctiva,[24] and the optic disk.[25–32] The origin of these pigmented lesions is the migration of ectopic melanocytes from the lamina cribosa of the optic nerve head.[33] The average age of diagnosis is 50 years, with a slight female predominance, and affecting both eyes in a similar proportion.[32] This usually unilateral tumor has an equal incidence in all races, whereas uveal melanoma is more common in a white population.[34] Referred to by different names in the literature such as magnocellular nevus or benign melanoma of the papilla.[35]

In the early twentieth century this type of tumor, then known as juxta-papillary melanoma, was considered malignant. Enucleation used to be the treatment of choice, but after observing that the majority of histopathological studies showed benign cells, this eventually lead to a modification in the treatment of this pathology, that remains valid to date.[30,31]

Most cases are asymptomatic (76%) which makes it difficult to estimate the actual prevalence in the general population.[29] The leading causes of patient's complaints are low visual acuity (16%), scotoma (4%) and metamorphopsia (4%). An afferent pupillary defect may be present in 30% of cases despite excellent visual acuity.[31,33]

The typical papillary lesion is a dark brown or black pigmented tumor usually located eccentric and on the temporal side. It can spread to adjacent tissues such as the retina or choroid. The lesion can be flat or protrude with a mean elevation and diameter of 4 mm and 10 mm respectively. Association with choroidal nevus has been reported in up to 50% of cases.[34,35]

Usually, the diagnosis is established after an incidental finding during a routine ophthalmologic examination. Further studies like fluorescein angiography, perimetry, standardized A-scan and B-scan ultrasound, and fundus photography should be ordered to confirm the diagnosis and rule out the differential diagnosis such as melanoma.[35–38]

Melanocytomas are extremely slow-growing tumors. Shields et al. have noted growth in 11% of melanocytomas at 5 years and 32% at 10 years. Such invasion always involves the intraretinal part of the tumor and never its choroidal components. Three risk factors for growth have been identified: increased tumor thickness, the presence of intrinsic vascularization, and dome shape.[34] Malignant transformation of a melanocytoma of the optic disk is a highly rare possibility, being found in only 1–2% of all reported cases. It has been observed primarily in white patients and can occur after many years of initial identification, emphasizing the need for long-term surveillance of this tumor.[33]

Limited data is available on the ocular ultrasounds findings in melanocytoma. This information is important as this data can be used to learn how these tumors can present and

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