Utility of multimodal imaging in amelanotic choroidal nevus

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DESCRIPTION
An asymptomatic woman presented for a routine eye evaluation with a corrected distance visual acuity of 20/20 in both eyes. Her right ocular examination was within normal limits. Left eye anterior examination was normal and dilated fundus examination showed a well-defined circular flat yellow lesion measuring a 1-disc diameter in size located infero-temporal to the macula possibly at the level of the retinal pigment epithelium (RPE) (figure 1A). An enface composite multicolour image showed a dark green coloured region corresponding to the lesion and it appears as a well-defined dark area on the infrared reflectance channel (figure 1B,C). Blue wavelength enface fundus autofluorescence imaging was normal (figure 1D). Enhanced depth imaging-optical coherence tomography scan passing through the lesion showed a well-delineated area of hyporeflectivity extending from the overlying intact RPE layer deep to the inner sclera. The lesion measured 320 µm in depth and 1780 µm in width (figure 2A). Optical coherence tomography angiography (OCTA) showed flow void areas within the lesion in the deep choroidal layer segmentation and a normal vascular pattern in the outer retina segmentation (figure 2B,C). As the lesion was flat, ultrasound B-scan was not done. Based on the findings of the multimodal imaging, we inferred that the lesion was a deep, flat choroidal lesion lacking vasculature and melanin pigment. Hence, a diagnosis of amelanotic choroidal nevus was made.

Amelanotic choroidal nevus is a congenital benign choroidal lesion accounting for <5% of cases. They need to be differentiated from other choroidal lesions such as benign pigmented choroidal nevus, inflammatory choroidal granuloma and amelanotic variant of malignant choroidal melanoma.

Multicolour scanning laser imaging (MI) is a newly introduced innovative, non-invasive, imaging modality developed for Spectralis SD-OCT (Heidelberg Engineering, Heidelberg, Germany). It has been widely used to describe the findings in various retinal and choroidal pathologies. Choroidal nevi are benign lesions and most of them contain melanin and appear pigmented. They show hyperreflectance on the infrared channel and appear ‘salmon pink’ on the multicolour image. This is in contrast to the current case where the lesion appeared dark (hyporeflective) on the infrared reflectance channel. This can be explained based on the light absorption properties of melanin. The melanin present in the choroidal melanocytes...
absorbs the shorter wavelength blue and green wavelength light while reflects the longer wavelength infrared light. Hence, a pigmented choroidal nevus lesion appears white on the infrared reflectance while an amelanotic choroidal lesion appears dark. On the other hand, OCTA is a non-invasive tool to study the blood flow in the retinal and choroidal vessels. Absence of intraretinal choroidal vessels and a normal overlying deep retinal vascular plexus suggests the avascular and benign nature of the lesion. Hence, monitoring the vascular alterations with OCTA could be a crucial step in identifying the early transition from a nevus to a melanoma.

Previous studies used swept-source OCT, near infra-red reflectance and multicolour imaging to characterise pigmented and non-pigmented choroidal nevi and to distinguish them from malignant tumours. Absence of pigmentation in amelanotic lesions helps to study the internal architecture and vascular component using MI. A small lesion size, plateau configuration and absence of secondary retinal changes warrant no further intervention except for regular follow-up as in the present case. Other amelanotic-looking choroidal lesions like choroidal osteoma which show back scattering on ultrasound, postinflammatory scars with choroidal thinning and metastatic deposits, which are bilateral, would be differentials in such cases.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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