Case 3437

Sonography and colour Doppler of choroidal melanoma ocular
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Section: Head & neck imaging
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Imaging Technique: Ultrasound-Colour Doppler
Imaging Technique: Ultrasound-Power Doppler
Imaging Technique: CT
Case Type: Clinical Cases
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Patient: 64 years, female

Clinical History:
A 64-year-old woman was presented with a loss of visual acuity in her left eye for the past two months. A sonography was performed, which demonstrated the presence of a solid subretinal mass, with a prominent colour Doppler signal, and retinal detachment.

Imaging Findings:
A 64-year-old woman was admitted to the ophthalmology service of our hospital because she had noticed a gradual loss of visual acuity in her left eye. Furthermore, this visual loss had increased rapidly in the past few weeks. A funduscopy was done, which showed the existence of a subretinal pigmented nodule with retinal detachment in the left eye. A sonography of the left eye performed with a 7–15 MHz transducer and a Philips HDI 5000 equipment (Royal Philips Electronic, Eindhoven, Netherlands), showed the presence of a solid subretinal mass (over 10 mm), with exofitic growth accompanied with retinal detachment (Fig. 1). On performing both colour Doppler and power Doppler flow techniques, it was found that the mass had a prominent signal in its inner part (Fig. 2a,b). An orbital CT scan was performed, which confirmed the existence of an intraocular mass (Fig. 3), without extraocular extension. The diagnosis was choroidal melanoma. Due to its abnormal size, the treatment procedure was enucleation of the left eye.

Discussion:
The choroidal melanoma is the most frequently occurring intraocular malignant primary tumour in adults and is the second most common type of primary melanoma after the skin. The choroidal melanoma originates from the dendritic melanocytes and it can appear everywhere in the choroids. It can turn up spontaneously, or from pre-existent lesions like choroidal nevus. Most of the affected patients are in the age group of 40–50 years. The clinical findings are characteristically the loss of central or peripheral sight due to the retinal detachment or because of the tumour growth. When the tumour is big in size, the pain can be felt. In most of the cases, the lesions are unilateral, although the patients with many nevi may have malignant transformation in different locations. On sonography, melanomas appear to have many types of forms depending on their size. When they are big in size, they occupy most part of the vitreous chamber; therefore those which are smaller in size cannot be seen clearly. The large ones show a heterogeneous structure with cystic components, corresponding to areas of necrosis or haemorrhagic areas. The small ones generally present a homogeneous structure. Another common sonographic finding is the existence of a retinal detachment. This can be due to a slight focal detachment besides the tumour or due to a total
detachment of the retina. The duplex Doppler and the power Doppler examinations of these tumours show a prominent flow with a low resistive index. The changes in the tumour vascularisation rate can be useful in monitoring the response after the treatment. Sonography is an excellent technique for the evaluation of intravitreous tumour size, but its sensitivity for the possible extraocular extent is low, whereas CT and MRI are more useful in the diagnosis of the possible extraocular extent. The differential diagnosis includes choroidal metastasis, which cannot be distinguished from the choroidal melanoma. Haemangioma is usually more echogenic and in this case spectral flow Doppler can help us due to the absence of a spectral Doppler low resistive index (RI), and moreover it lets us see arterial and venous flow in its inner part. The choroidal melanoma treatment is generally based on the size of the tumour. The small ones or those which are suspected are kept under observation to detect the changes in size. The intermediate sized ones can be treated conservatively, by brachytherapy or charged-particles radiation (proton or helium ion).

**Differential Diagnosis List:**  Choroidal melanoma.

**Final Diagnosis:**  Choroidal melanoma.

**References:**


**Figure 1**

Description: A transverse sonograph showing a well-defined subretinal mass (indicated by an arrow), with areas cystic in its inner (indicated by an arrowhead) and the detachment of the retina (indicated by a curved arrow). Origin:
Description: A colour Doppler image demonstrating the marked presence of vessels in the inner part of the tumour. Origin:
Description: The power Doppler image revealing hypervascularity of the tumour. Origin:
Description: A contrast-enhanced CT image showing an intraocular hyperdense mass, with the detachment of the retina without an extraocular extension. Origin: