Short communication

Combined choroidal biopsy and cytology for diagnosis of intraocular tumour

A. Sala-Puigdollers*, E. Rodríguez-de la Rúa, M.A. Saornil, C. García-Álvarez, E. García-Lagarto, Y. Ovelar Arribas

Hospital Clínico Universitario de Valladolid, Universidad de Valladolid, Valladolid, Spain

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ABSTRACT

Clinical case: No intraocular biopsy technique is free of risk and all have the possibility of giving false negatives due to the difficulty in obtaining a sufficient sample.

A modified chorioretinal biopsy was performed on a patient with suspected choroidal melanoma after negative biopsy with 25 G vitrectomy. In addition to removing a solid fragment of tumor material using bimanual surgery, material from the lesion was obtained with the vitreotome to perform cytology, which confirmed the diagnosis of melanoma.

Discussion: Cytology obtained through the vitreotome in association with removing a solid sample of the choroidal lesion may improve the efficiency of intraocular biopsy.

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Técnica combinada de vitrectomía con biopsia y citología en el diagnóstico de tumor intraocular

RESUMEN

Caso clínico: Ninguna técnica de biopsia intraocular es inocua y todas tienen posibilidad de falsos negativos por la dificultad para obtener una muestra suficiente.

Paciente con sospecha de melanoma tras biopsia negativa con vitrectomía 25 G. Se realiza biopsia coriorretiniana modificada en la que además de extraerse un fragmento mediante cirugía bimanual, se obtiene material de la lesión con vitreotomo para realizar citología, confirmando el diagnóstico de sospecha de melanoma de coroides.

Discusión: La asociación de una citología obtenida con vitreotomo de una lesión coroidea asociada a la escisión de un fragmento de la lesión puede mejorar la eficacia de la biopsia intraocular.

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* Corresponding author.
E-mail address: annasalapuigdollers@hotmail.com (A. Sala-Puigdollers).

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Introduction

The main indication for intraocular tumor biopsy is the inability to establish the diagnostic with noninvasive methods in a patient requiring treatment, including amelanotic masses without previous extraocular neoplastic history, patient rejection of treatment without diagnostic confirmation, suspected relapse or when a genetic study is required for prognosis. Intraocular biopsy can be performed with various techniques, including vitrectomy for vitreous cytology, aspiration with fine needle (trans-scleral or trans-vitreal), external scleral choroidal resection and endoretinal biopsy. None of these techniques is innocuous and in addition produce a high percentage of false negatives due to the difficulty in obtaining sufficient sample for histopathological analysis.

This paper presents a case of intraocular biopsy with a modification of the technique for diminishing false negatives which associates obtaining a solid fragment of the lesion by means of bimanual surgery with aspiration of matter by means of vitreotome for cytological analysis.

Surgical technique

A female, aged 39 years, with bilateral proliferative diabetic retinopathy was treated with panretinophotocoagulation in both eyes. During the follow-up period she developed a mass clinically suspected of diffuse choroidal melanoma with a base exceeding 15 mm in echography and juxtapapillary location (Figs. 1 and 2).

Before accepting enucleation, the patient requested histological confirmation. Accordingly, biopsy was performed with 25G vitreotome which gave a negative result.

Subsequently and due to strong clinical suspicion pars plana vitrectomy with ancillary light was performed. By means of endodiathermia an area of approximately 3 mm × 3 mm was marked in the surface of the injury, cutting bimanually with tweezers and scissors to obtain chorioretinal biopsy. The modification introduced in the technique is that subsequently the vitreotome was introduced in the choroidal injury and with low sections (200 cuts/s) and the aspiration system connected to a syringe for the assistant to manually aspire the tissue cuts by the vitreotome. The syringe contents were introduced in a liquid for cytological study. Subsequently silicone oil was injected.

The biopsy and cytology results confirmed the diagnostic of fusiform choroidal melanoma (HMB45+ and Melan A+) (Figs. 3–5).

Discussion

The existence of diagnostic doubts, the increased demand of patients who require precise diagnostics before accepting therapeutic measures and the appearance of cytogenetic study techniques allowing the preparation of prognostics for patients have significantly increased the execution of chorioretinal biopsies.

New techniques developed in recent years, such as fine needle aspiration and biopsy with 25G vitreotome which have become increasingly popular have reduced surgical aggressiveness and complication rates. However, said lower aggressiveness is associated to a lower amount of tissue obtained and therefore the likelihood of false negatives increases even though they are still infrequent.

For the above reasons, chorioretinal biopsies in which solid fragments of the injury are extracted continue to have some indications. These are highly aggressive surgeries with high risk of retina detachment with proliferative vitreoretinopathy, vitreous and choroidal hemorrhage, etc. Accordingly, it is important to obtain sufficient material to make an adequate diagnostic when considering these interventions.

The association of local injury resection with vitreotome and the preservation of this sample in the cytology liquid
Fig. 3 – (a) Hematoxiline–eosine (4×). Multiple tumor fragments obtained from the intraocular biopsy. (b) Hematoxiline–eosine (40×). Tumor constituted by a dense proliferation of fusiform cells with atypical oval-shaped nuclei and occasionally with brownish granular pigment in cytoplasm.

Fig. 4 – (a) (10×) Human melanoma black-45 (HMB-45) intensely positive in tumor cell cytoplasm. (b) (10×) Melan A intensely positive in tumor cell cytoplasm.

Fig. 5 – (a) Pap test (4×). (b) Pap test (10×). Cytology in liquid medium with abundance cellularity with similar characteristics as those observed in the biopsy.

increase the amount of sample available for Pathological Anatomy thus improving the probabilities of a reliable diagnostic.

The importance of executing said resection with low cuts in the vitreotome in order to reduce damages in the obtained sample has been described. In this case, in addition to associating the attention of a solid fragment with tweezers and scissors, a sample was obtained with the vitreotome, connecting the vitreotome aspiration system to a syringe to ensure the collection of said cells. To the best of our knowledge this maneuver has not been described until now.

The association of cytology obtained with vitreotome from a choroidal injury associated to excision with tweezers and scissors of a fragment of said injury could improve the diagnostic capacity of chorioretinal biopsies.

Conflict of interests

No conflict of interests has been declared by the authors

References


