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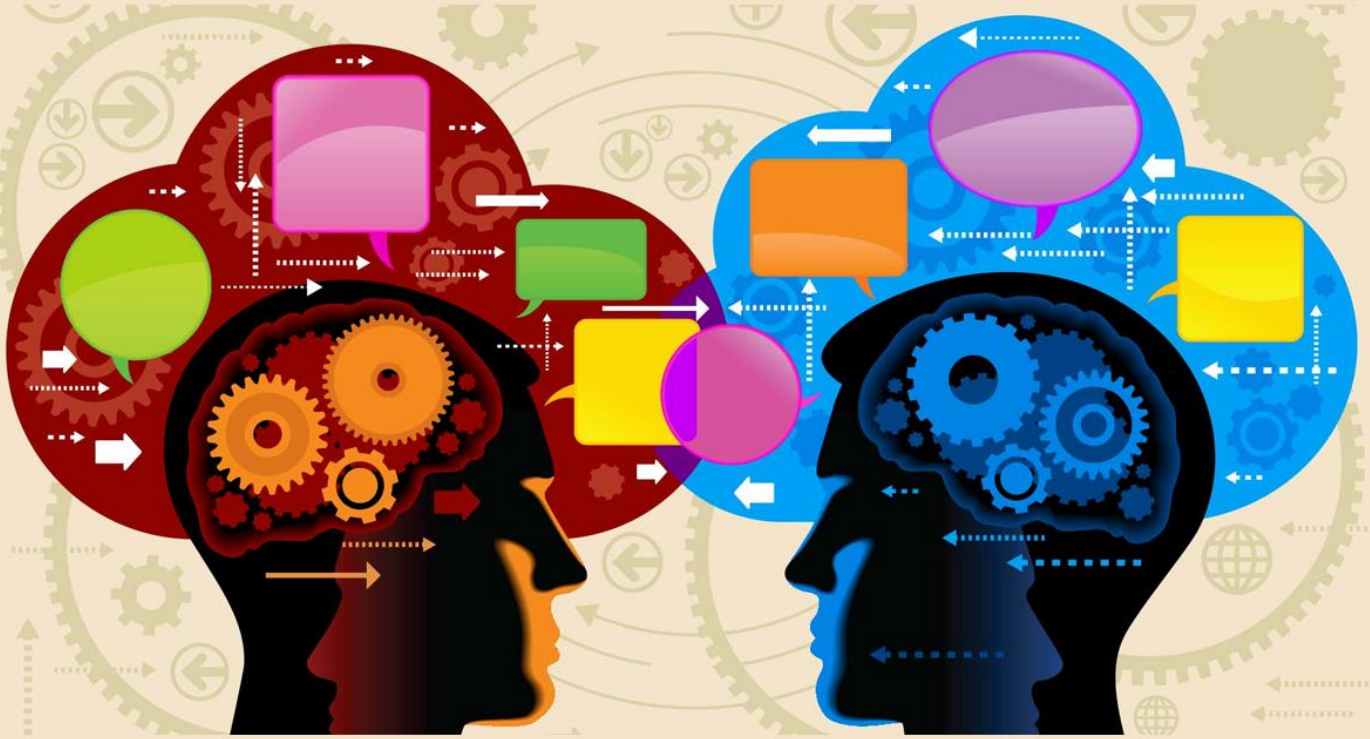

ABSTRACTS OF VI INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE MAY 10-12, 2020

KHARKIV
2020

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Abstracts of VI International Scientific and Practical Conference

Kharkiv, Ukraine

10-12 May 2020

Kharkiv, Ukraine

2020

UDC 001.1
BBK 29

The 6th International scientific and practical conference "Science, society, education: topical issues and development prospects" (May 10-12, 2020) SPC "Sci-conf.com.ua", Kharkiv, Ukraine. 2020. 1125 p.

ISBN 978-966-8219-83-2

The recommended citation for this publication is:
Ivanov I. Analysis of the phaunistic composition of Ukraine // Science, society, education: topical issues and development prospects. Abstracts of the 6th International scientific and practical conference. SPC "Sci-conf.com.ua". Kharkiv, Ukraine. 2020. Pp. 21-27. URL: http://sci-conf.com.ua.

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БИОЛОГИЧЕСКИЕ НАУКИ

МЕДИЦИНСКИЕ НАУКИ

МЕДИЦИНСКИЕ НАУКИ

AN UNUSUAL VERSION OF A NEUROGENIC RETINAL TUMOR IN AN ADULT

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Introduction. Retinoblastoma is practically the only malignant tumor of the retina, which is histo-genetically not connected with the outer leaf of the optic vesicle. According to most authors, up to 80% of retinoblastomas are diagnosed in children under 5 years of age. The remaining 20% are detected in children and adolescents up to 10 years. Single descriptions of retinoblastoma are known in adult patients 30-50 years old, made mainly in the first half of the last century.

Given the imperfection of histo-morphological classifications of that period, as well as the fact that these descriptions were made mainly by ophthalmologists, it is difficult to judge the reliability of the diagnosis. One of the most detailed descriptions made in the 60s of the last century belongs to E.F. Levkoeva, who presented two unusual retinal tumors in a man of 47 years and a woman of 52 years. According to the author, both tumors were more consistent with medulloepithelioma, although undifferentiated cells of the retinoblast (neuroblast) type were noted in some places.

Thus, the question of the possibility of developing true retinoblastomas in adults remains debatable.

Aim. The purpose of this study is to use the example of an extremely rare case to analyze the possibility of developing adult neurogenic retinal tumors histo-genetically close to retinoblastoma and to pay attention to their morphological features.

Materials and methods. The analysis of data of the clinical observation is carried out. The results of histo-morphological (hematoxylin-eosin stain) and immuno-histochemical studies of an unusual eye tumor removed in an elderly man are presented.

Results and discussion. A tumor of the right eye, clinically verified as intraocular melanoblastoma was revealed in man born in 1959 who came to the ophthalmologic clinic in 2016. Initially the patient refused the proposed enucleation. However, in July 2019, the patient returned again due to acute pain in the right eye. A clinical examination of the right eye revealed edema of the eyelids, a pronounced injection of conjunctival vessels, corneal edema, and a narrow anterior chamber. The fundus for ophthalmoscopic examination was not available. An ultrasound scan was performed that detected a tumor node measuring 20x21x17.3 mm. Left eye without pathological changes.

Enucleation of the right eye was performed. Microscopic examination revealed a tumor that performs almost the entire cavity of the eyeball and is represented by fields of rounded small cells of the lymphocytic type, forming perivascular sockets and rosettes with an abundance of dry necrosis and small calcifications**.** The bulk of the tumor tissue was localized in the vitreous body and connected with the retina. The invasion of the choroid was determined only on a small extent - in the form of a flattened node with a prominence of up to 1-2 mm.

As a whole the microscopic picture corresponded to that with the retinoblastoma of so-called an undifferentiated type, for which pathognomonic Flexner-Wintersteiner rosettes are not characteristic (Fig. 1).

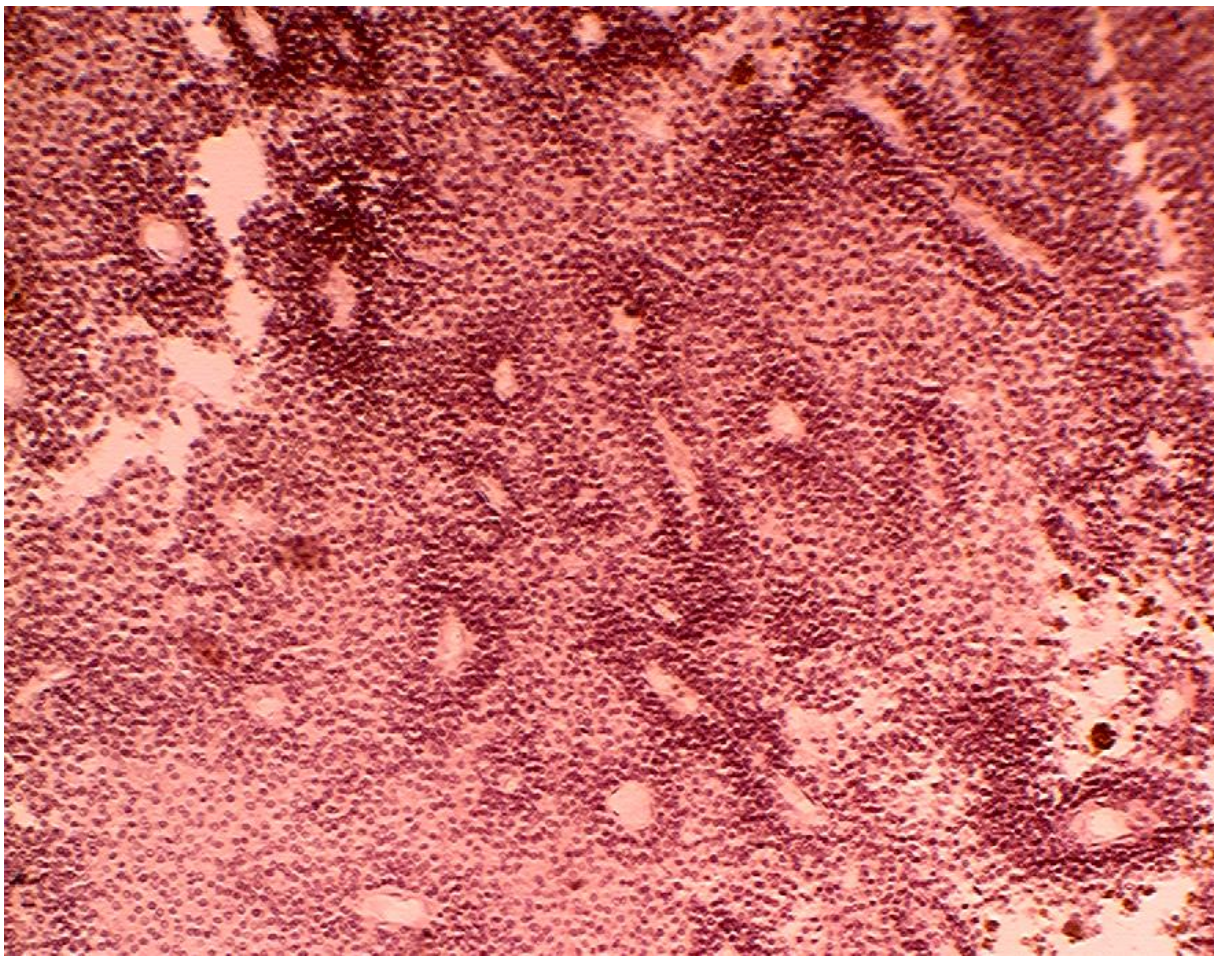

Fig. 1. The microscopic picture of the tumor at low magnification

Thus, the absence of choroidal growth and the nature of histological patterns indicated the retinal origin of the tumor. At the same time, neuro-epithelial patterns characteristic of medulloepithelioma were absent in the tumor, and rosette structures were sporadic and resembled Homer Wright rosettes rather than Flexner-Wintersteiner rosettes typical of retinoblastoma - in the micrograph they are shown by arrows (Fig. 2).

In general, histo-morphological patterns were sufficient to diagnose retinoblastoma. Therefore, the preliminary histo-morphological diagnosis was as follows: low-grade neurogenic retinal tumor with patterns characteristic of retinoblastoma. However, given the patient's age (more than 60 years), it was considered advisable to supplement the histological examination with immuno-histochemical studies. Although there have been isolated descriptions of cases of retinoblastoma in adults, all of them were made in the last century based on

microscopic analysis of tumor tissue.

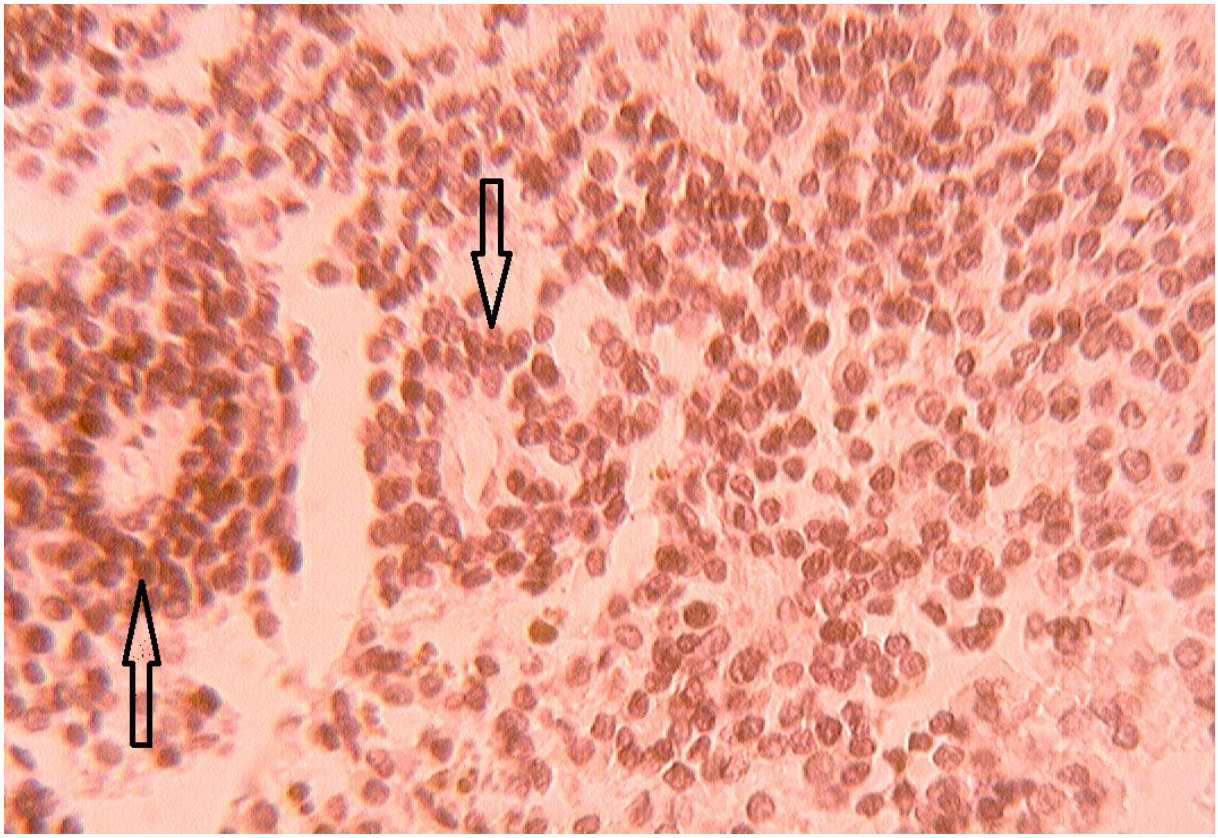

Fig. 2. The microscopic picture of the tumor at high magnification

Immunohistochemical study yielded the following results, which are presented in the table (Table 1). So, probable diagnosis, taking into account the immunohistochemical data: cellular ependymoma of the 2nd degree of malignancy, according to the classification of CNS tumors. Anyway, immunohistochemical patterns testified against medulloblastoma and other tumors of neuroepithelial and neuroectodermal genesis.

Other markers (Neuroblastoma, Cytokeratin MNF-116, Neurofilaments, Sinaptophysin, CD-45, CD-56, CD-99, HMB-45) showed a negative result.

Conclusions. A histomorphological and immunohistochemical study of an unusual intraocular tumor detected in a 60-year-old man and initially clinically diagnosed as uveal melanoma revealed a rare type of neurogenic retinal tumor other than medulloblastoma. Histologically, the tumor is close to retinoblastoma, however, the absence of true Flexner-Wintersteiner rosettes and the immunohistochemical profile do not allow us to uniquely identify this tumor as retinoblastoma. This

observation indicates the need to highlight this type of neoplasm in the classification of eye tumors. The existing gap in the classifications, apparently, is associated with the erroneous verification of tumors of this type as medulloblastoma (medulloepitelioma) or amelanotic melanoma. The illustrations submitted here suggest that without immunohistochemical studies, many of these neoplasms were previously presented as rare variants of retinoblastoma in adults.

Table 1

Immunohistochemical profile of the tumor

Immunohistochemical marker	Result
GFAP - Glial fibrillary acidic protein	+++
Vimentin- type III intermediate filament	++
S-100 protein	++
Ki-67 - proliferative index	2%
EMA -Epithelial membrane antigen	+
Neuroblastoma - type IV intermediate filaments of the cytoplasm of neurons	0
Cytokeratin MNF-116 – first line marker for epithelial tumors	0
Neurofilaments- typeIV intermediate filaments of the cytoplasm of neurons.	0
Sinaptophysin - the major synaptic vesicle protein p38	0
CD-45 - protein tyrosine phospha	0
CD-56 - contributes to cell-cell or cell-matrix adhesion during development	0
CD-99- inhibition of cell-extracellular matrix adhesion	0
HMB-45 - antigen for melanoma	0