Vitreoretinal Lymphomas – one centre experience

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BACKROUND

Vitreoretinal lymphomas belong to the family of central nervous system (CNS) lymphomas and this close association is responsible for high rate of mortality; the 5-year survival rate has been reported to be 30–60 %. In 95 % of cases they are represented by B-cell non-Hodgkin‘s lymphomas, mostly the subtype of diffuse large B-cell lymphoma (DLBCL). Approximately 80 % of patients with primary vitreoretinal lymphoma (PVRL) eventually develop CNS lymphoma.
The optimal approach for the treatment of isolated PVRL is unclear because of the lack of large comparative clinical series and clinical trials. The current treatment options depend on clinical manifestation and local practice. Local ophthalmic treatments comprise of intravitreal chemotherapy with methotrexate (MTX) or rituximab and ocular radiotherapy. Local CNS treatments include intrathecal chemotherapy and brain radiotherapy. Systemic treatments represent intravenous chemotherapy or peripheral stem cell transplantation. Combination of local and systemic therapy is recommended in many reports.

PATIENTS AND METHODS

The aim of our retrospective study was to compare the survival rate and prognosis of patients with vitreoretinal lymphoma with and without CNS involvement. Twenty patients with vitreoretinal lymphoma were diagnosed in our centre between 2004 and 2016. All patients underwent diagnostic pars plana vitrectomy with vitreous cytology analysis (Fig. 1). Flow cytometry of vitreous was analyzed in 13 patients.

Fig. 1

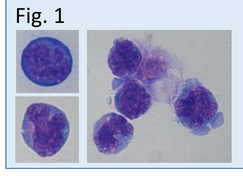

Fig. 1 Cytological examination of vitreous detected atypical large-sized cells with irregular nucleus and large nucleoli suspicious of lymphoma. May-Grünwald stain, by courtesy of K. Mrazova, MD.

Treatment was indicated by hematooncologist and ophthalmologist according to the clinical manifestation

RESULTS

In group of twenty patients were 10 men and 10 women, median age was 60 years. **PVRL** was determined in 10 patients (50 %), **primary CNS lymphoma (PCNSL) with vitreoretinal involvement** was detected in 7 patients (35 %) and 3 patients (15 %) had **PCNSL with isolated vitreoretinal relapse.**

All patients with PVRL received intravitreal chemotherapy (MTX or rituxumab; Fig. 2), 7 patients with PVRL had systemic treatment as well (MTX based; Fig. 3). All PCNSL patients received both local and systemic treatment.

Fig. 2

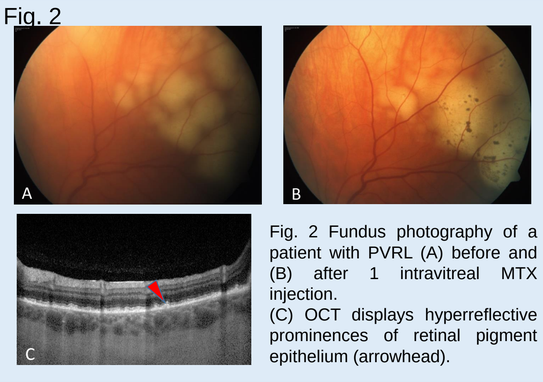

Fig. 2 Fundus photography of a patient with PVRL (A) before and (B) after 1 intravitreal MTX injection.
(C) OCT displays hyperreflective prominences of retinal pigment epithelium (arrowhead).

Fig. 3

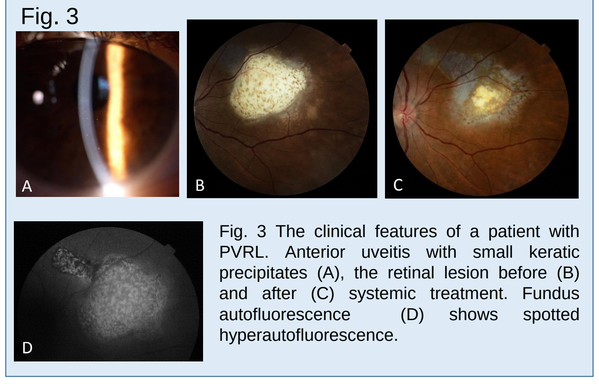

Fig. 3 The clinical features of a patient with PVRL. Anterior uveitis with small keratic precipitates (A), the retinal lesion before (B) and after (C) systemic treatment. Fundus autofluorescence (D) shows spotted hyperautofluorescence.

Vitreoretinal lymphoma is a life-threatening disease, with 5-year **survival** rate of 71 % in our study. 5-year overall survival (OS) was observed to be longer in PVRL patients compared to PCNSL with vitreoretinal involvement (89 % v. 58 %, p = NS, Fig. 4).

RESULTS

Combined (local+systemic) **treatment** in PVRL patients showed favourable results in comparison with local therapy alone. However, the statistical significance was not reached (Fig.5).

The median observation period of living patients (n 14) was 66 months (14-166 months).
The **relapse** of lymphoma was frequent; 60 % in PVRL group and 60 % in PCNSL group. CNS relapse was observed in PVRL group in 6 patients (60 %), the median time to first relapse was 31.4 month (2.6 years). Four patients with PCNSL had intraocular relapse; all were treated by local intravitreal therapy, 3 patients had additional intrathecal and systemic therapy.

Time to first relapse was almost equal in group of PVRL and PCNSL patients (45 % vs. 50 % in 5-year period; Fig. 6). Initial combined therapy in PVRL patients significantly extended the time until the first relapse when compared to initial local therapy alone (Fig. 7).

The **visual acuity** (VA) was evaluated. The difference of VA at the beginning and the end of observation had to be 0.2 and more in decimal Snellen score to be significant.
VA improved in PVRL group (18 eyes) in 5 eyes, worsened in 2 eyes. Patients with PCNSL (15 eyes) improved VA in 3 eyes, worsened in 2 eyes. VA remained unchanged in 17 eyes. Other ocular complications occurred in 5 eyes: hemopthalmos twice, endopthalmitis, age related macular degeneration, branch venous retinal occlusion. Endopthalmitis was the only complication directly caused by repeated intravitreal chemotherapy.

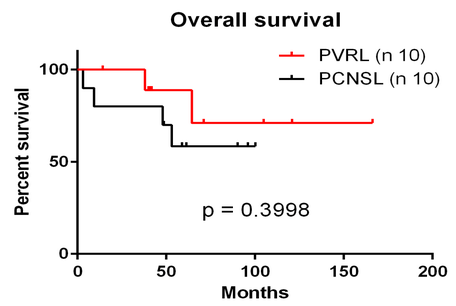

Fig. 4 The comparison of 5-year overall survival in PVRL and PCNSL patients with vitreoretinal involvement.

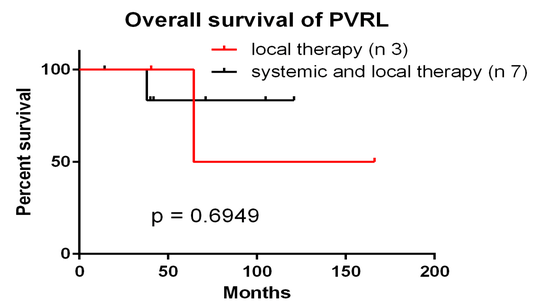

Fig. 5 The comparison of 5-year overall survival in PVRL patients treated with local and combined therapy.

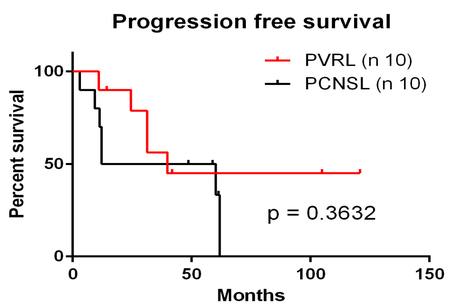

Fig. 6 The comparison of survival until 1st relapse in PVRL and PCNSL group.

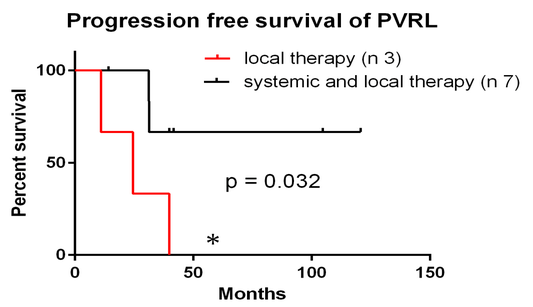

Fig. 7 The comparison of survival until 1st relapse in PVRL patients treated initially by only local and combined therapy.

CONCLUSION

Patients with vitreoretinal lymphoma without CNS involvement (PVRL) seem to have better prognosis compared to patients with vitreoretinal lymphoma with CNS involvement (PCNSL). Local and combined (local+systemic) treatment of PVRL show similar results, but combined treatment in our observation significantly postpones the relapse of lymphoma. However, most results are not statistically significant due to small number of patients.

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