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SUBRETINAL GENE THERAPY: SURGICAL PEARLS

Oral

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Purpose:

To date, there is little experience in surgical practice with VN(voretigene neparvovek) in treatment of RPE65-IRD. Herein, we present surgical challenges in treating the first twenty-three patients with RPE65-IRD treated with VN at the University Eye Department of the University Hospital „Sveti Duh“, Zagreb, Croatia.

Methods:

Twenty-three patients with RPE65-IRD were treated with VN. Patients underwent pars plana vitrectomy (PPV) with subretinal VN application. 20 patients with RPE65-IRD on both eyes, and three patients with RPE65-IRD on one eye were treated by a subretinal application of VN. The patients were aged from 6 to 66 years of age. All patients were diagnosed with biallelic RPE65 mutation prior to the treatment. In total 10 patients were from Croatia, and 13 patients were referred from other countries within the EU.

Results:

The critical step of pars plana vitrectomy with VN instillation is the subretinal bleb formation. To achieve successful subretinal bleb formation, in some cases, there are additional steps to be made. As described, in some patients that were blood relatives, repeated staining with preservative-free triamcinolone acetonide to achieve PVD induction was needed due to the structure and consistency of the vitreous. Before entering the subretinal space, due to the resistance of the ILM, localized ILM-peeling was performed. In order to surround the macular area, multiple bleb formation was necessary.

Conclusions:

43 subretinal surgeries were performed by a two-surgeon team. Key anatomical features pertinent to surgical management were noted. Surgical decisions important- for successful subretinal administration of viral vectors and management of potential surgical challenges were formulated.