SPONTANEOUS RESOLUTION OF A RHEGMATOGENOUS RETINAL DETACHMENT

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SPONTANO NALEGANJE RETINE POSLE REGMATOGENE ABLACIJE RETINE

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ABSTRACT

A retinal detachment is the term used to describe detachment of the neurosensory retina from the underlying membrane, the retinal pigment epithelium (RPE). Rhegmatogenous detachments are caused by a break in the retina through which fluid passes from the vitreous cavity into the subretinal space. The incidence of rhegmatogenous retinal detachment in the general population in Europe is 1 in 10 000 persons per year. Danger is the greatest in the age range from 55 to 70 years. Without treatment, blindness in the affected eye may occur. Individual risks depend on the presence or absence of specific factors including myopia, positive family anamnesis, retina rupture, trauma, ablation in the other eye, ablation in a vitreous body, retina high-risk peripheral degenerations and vitreoretinal degenerations. Majority of the untreated rhegmatogenous retina ablations progress to the subtotal or total retinal detachment and blindness. This paper describes a very rare case of the spontaneous complete reattachment of the sensory retina to the retinal pigment epithelium in a patient with the total rhegmatogenous retinal ablation in the right eye. The female patient, who was 52 years old, was examined by an Ophthalmologist after she had experienced a sudden loss of vision, 2 months before appointment. After a detailed ophthalmological examination, a total rhegmatogenous retinal ablation of the right eye was diagnosed. The best corrected visual acuity, evaluated on a Snellen chart, was 2/60. The patient was referred to a tertiary-level Institution since a surgical intervention of the ablation was needed. Due to technical inabilities in the above-mentioned Institution, the operation was not performed, and despite the recommendation to perform the intervention in another tertiary level Institution, the patient did not have ophthalmological examinations during the following three months. During the next visit, the Ophthalmologist determined that there was a spontaneous retinal fixation on the retinal pigment epithelium and a partial restoration of the visual function of the affected eye which was evaluated at 0.5.

Keywords: *retinal detachment, retinal breaks, spontaneous resolution of retinal detachment*

SAŽETAK

Ablacija retine je termin koji se koristi za opisivanje razdvajanja neurosenzorne retine od retinalnog pigmentnog epitela, sloja koji se nalazi ispod nje. Regmatogene ablacije retine uzrokovane su prolaskom tečnosti iz vitrealne šupljine kroz rupturu na retini u potencijalni subretinalni prostor između senzorne retine i retinalnog pigmentnog epitela. Učestalost regmatogenih ablacija retine u opštoj populaciji u Evropi iznosi 1 na 10000 stanovnika godišnje. Rizik je najveći u uzrastu od 55 do 70 godina. Bez lečenja može da dovede do slepila na zahvaćenom oku. Individualni rizik zavisi od prisustva ili odsustva faktora kao sto su kratkovidost, pozitivna porodična anamneza, ruptura retine ili ablacija na drugom oku, ablacija staklastog tela, trauma, periferne degeneracije retine visokog rizika i vitreoretinalna degeneracija. Većina nelečenih regmatogenih ablacija retine napreduje do subtotalnog ili totalnog odlubljenja retine i slepila. Prezentujemo veoma redak slučaj potpunog spontanog naleganje senzorne retine na retinalni pigmentni epitel kod pacijentkinje sa totalnom regmatogenom ablacijom retine na desnom oku. Pacijentkinja starosti 52 godine, 2 meseca nakon naglo nastalog gubitka vida pregledana je od strane oftalmologa. Prilikom detaljnog oftalmološkog pregleda dijagnostikovana je totalna regmatogena ablacija retine na desnom oku. Najbolje korigovana vidna oštrina na zavnaćenom oku iznosila je 2/60 po Snelenovim tablicama. Upućena je u stanovu tercijarnog nivoa zbog hirurškog lečenja ablacije. Zbog tehničkih nemogućnosti u datoj ustanovi operacija nije obavljena a uprkos preporuci da se tretman obavi u drugoj ustanovi tercijarnog tipa, pacijentikinja naredna 3 meseca nije odlazila na oftalmološke preglede. Pri ponovnom pregledu oftalmologa utvrđeno je spontano naleganje retine na retinalni pigmentni epitel i delimična restitucija vidne funkcije na zahvaćenom desnom oku koja je iznosila 0.5.

Ključne reči: *ablacija retine, ruptura retine, spontana restitucija ablacije retine*

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INTRODUCTION

Retinal detachment is separation of the neurosensory retina from retinal pigment epithelium by subretinal fluid. Retinal detachments are classified as: rhegmatogenous, tractional and exudative. The most common are rhegmatogenous retinal detachments (RRDs). They are caused by fluid passing from the vitreous cavity through a retinal break into the potential epitelioretinal interspace between the sensory retina and the retinal pigment epithelium (RPE). The incidence of rhegmatogenous retinal detachment in the general population in Europe is 1 in 10 000 persons per year. Danger is the greatest within the age range 55-70. Without treatment, it may result in the blindness of the affected eye (1). A retinal break is full-thickness defect in the neurosensory retina. Surgical treatment of retinal detachments includes 3 approaches: 1) scleral buckling, 2) vitrectomy and 3) pneumatic retinopexy.

A limited retinal detachment left untreated may follow one of four potential outcomes:

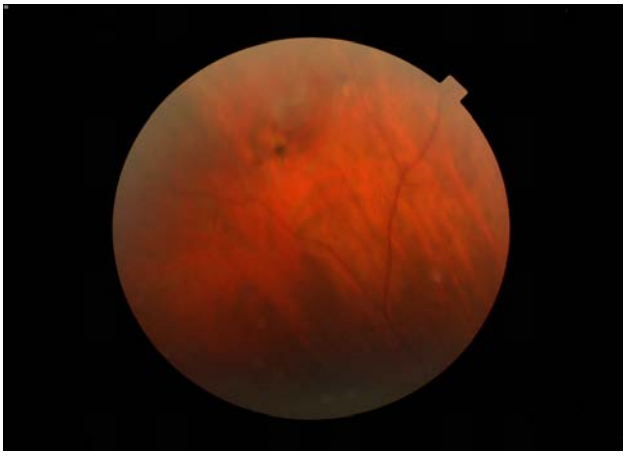
1. Usually, most untreated clinical rhegmatogenous detachments progress to near total or total detachment and blindness.
2. Occasionally, the detachment indefinitely remains a subtotal detachment with stable borders and the creation of demarcation lines. This most commonly occurs with detachments caused by inferior breaks, particularly small breaks or dialyses.
3. Rarely, subretinal fluid settles inferiorly away from the break due to a superior retinal break and the site of the original break flattens.
4. Very rarely, spontaneous reattachment occurs and it is usually associated with a very small break and excellent presumed "pumping" of the retinal pigment epithelium or closure of the break by the scar tissue (2).

CASE PRESENTATION

This paper presents the case of a female patient aged 52 who was admitted due to a sudden decay of vision which had occurred two months earlier.

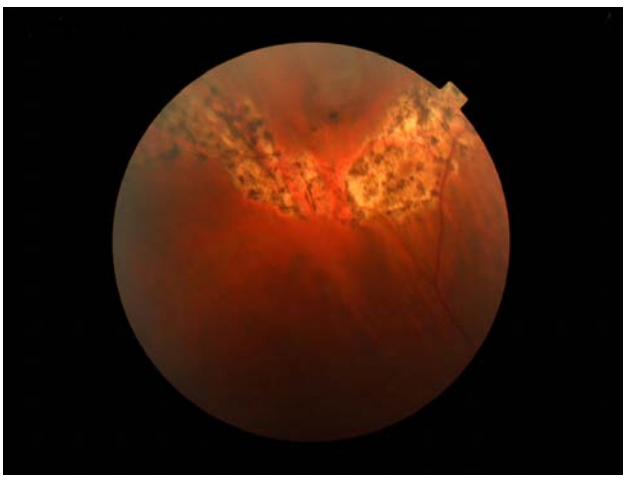
The patient had been treated for depression and hypothyroidism and was using the following therapy: *Elorica* ,*Risperidone* and *Letrox* tablets. The best corrected vision acuity, evaluated on a Snellen chart, was 2/60 for the right eye an 1.0 for the left eye. The intraoclular pressure was 14 mmHg in both eyes. The slit-lamp examination revealed the presence of blurred type of tobacco dust in corpus vitreum. Examination of the fundus confirmed the complete retinal detachment with a huge retinal break in the upper temporal quadrant. The examination of the left-eye fundus did not reveal any significant pathological changes. The patient was emergently referred to a tertiary-level Institution for the surgical treatment of the retinal detachment but she was not admitted due to technical inabilities of the Institution to perform the surgical intervention needed to treat the ablation. The next visit to the competent Ophthalmologist took place after 3 months. On this occasion, the examination of the fundus revealed that there was a total reattachment of the previously detached retina to pigment epithelia with a huge U-shaped rupture present in the upper temporal quadrant. In the lower half of the retina, there was a diffuse retinal pigment alternation inside the sharply limited convex edge. The best corrected visual acuity, evaluated on a Snellen chart, was 0.5 for the right eye. The fundus photograph of the affected eye is presented in the Figure 1.

Figure 1. Fundus photography. U-shaped rupture in the upper temporal quadrant of the right eye



The Laser Photocoagulation (LCP) was conducted for the rupture barrage and the entire peripheral retina circumference. The following parameters were set: LCP spot diameter at 200 μm, power at 280-300 mV, exposition time at 0.2 seconds. Seven hundred spots were placed. Regular check-ups were scheduled once a month. Fundus photography of both eyes was conducted. It detected pigmented LPC spots, through the entire circumference of the peripheral retina and a large U-shaped rupture in the upper temporal quadrant of the right eye (Figure 2).

Figure 2. Fundus photography. LPC spots, through the entire circumference of the peripheral retina and a large U-shaped rupture in the upper temporal quadrant of the right eye



On a control check after 2 months, there was a decline in the best corrected visual acuity which was 0.3 at this point. The eye fundus examination revealed the Epiretinal Membrane (ERM) in the macula area, whose presence was confirmed with the Optical Coherence Tomography (OCT) (Figure 3). The OCT findings for the left eye showed the regular morphology of the macula. Computerized visual field was performed for both eyes. The following values were determined: MD -5.77 dB, PSD 4.43 dB for the right eye and MD -2.38dB, PSD 3.89 dB for the left eye (Figure 4). After the treatment and examination, the patient was referred to a tertiary Institution where she was examined by a Vitreoretinal Surgeon and continued her regular check-ups there.

Figure 3. OCT right eye. ERM

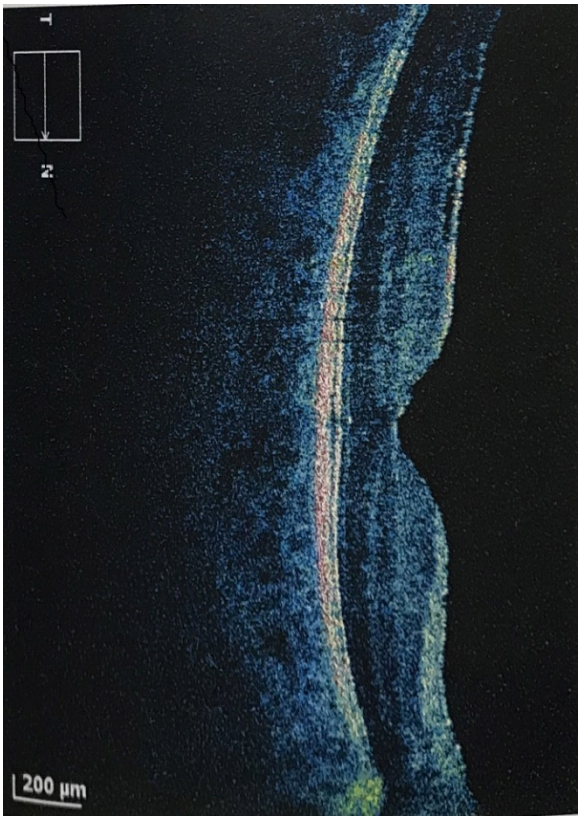
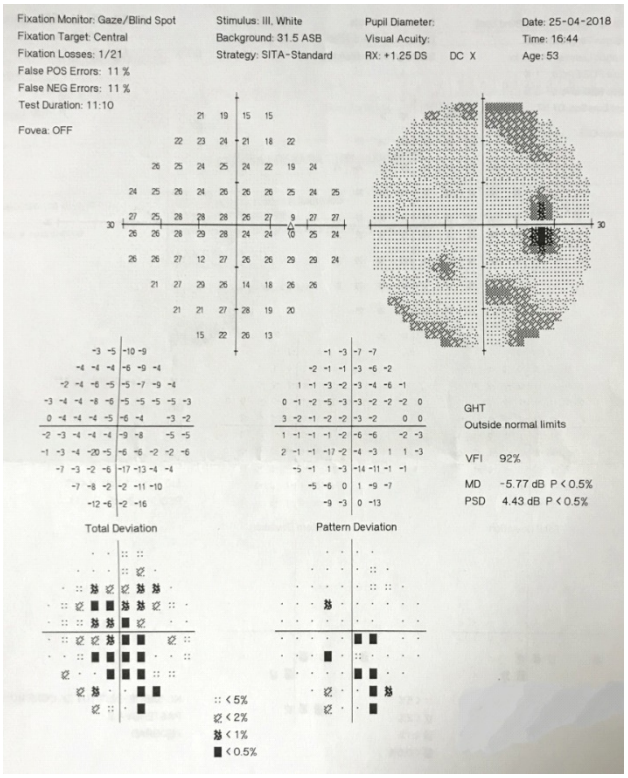


Figure 4. Computer visual field right eye



DISCUSSION

Spontaneous reattachment of retina after the total retina ablation is a rare phenomenon. Only a few isolated examples have been detected in the relevant references. Ryosuke Ochi et al. described a case of spontaneous resolution of retina ablation in 4-year-old boy with Coats disease four months after the boy had been diagnosed with total retina ablation. The authors suggested that the retina reattachment resulted from a decline in the retina abnormal blood vessels permeability and the good functional ability of the retinal pigmented epithelium (3). The Retinal Pigment Epithelium (RPE) consist of a single line of mononuclear hexagonal cells.

Cells are interconnected with occludent bonds that prevent the passage of water and ions. They form an external hemato-ocular barrier. Roles of the RPE can be summarized as follows: (1) the RPE cells are rich in mitochondria and they actively participate in the oxidative metabolism because they contain antioxidant enzymes, and thus reduce the formation of free radicals that can damage lipid membranes, (2) they form and maintain a photoreceptive matrix which is important for the retinal adhesion, (3) they participate in the production of growth factors through which the RPE controls the vascular endothelium, its permeability, recovery and proliferation (reparative processes). The RPE also plays an important role in the transport of water and electrolytes since it pumps the fluid from a retina to choruses against the strong hydrostatic or osmotic pressure. RPE membranes contain selective ionic channels and transfer systems for the transmission of ions, metabolites, glucose and amino acids. The sodium-potassium pump is active on the apical part of RPE cells while the chlorine-bicarbonate exchange takes place at the basal membrane of pigment cells. Thanks to these pumps, water and ions are moving transcellularly. A good functional ability of RPE results in maintaining the dryness of a subretinal space (4). In 2012, an isolated case of a spontaneous reattachment of ablated retina caused by a rupture was reported. It had been diagnosed during the pregnancy and the reattachment occurred after the delivery. In this particular case, physiological changes induced during the delivery are suspected to be a mechanism of the resolution of total retina ablation which had occurred during the pregnancy (5). Diffuse retinal pigment alterations inside the sharply limited convex edge are the most common finding after the

reattachment of an ablated retina in all cases described in the current references. In 2015, a case of a 60-year-old man was reported where the patient had a spontaneous reattachment of retina, after rhegmatogenous ablation, with gradual correction of visual function and a fully restored retina (6). Song Ee Chung et al. tried to explain mechanism of the Spontaneous Reattachment of Rhegmatogenous Retinal Detachment (SRRRD). Initially, both focal vitreoretinal adhesion and vitreoretinal traction induce a retinal break in the peripheral retina in an eye without a complete PVD. This is followed by an influx of liquefied vitreous into the retinal break, constituting the development of retinal detachment. However, the direction of vitreoretinal traction changes to parallel the elevated retinal surface. Eventually, vitreoretinal traction is relieved and the retinal break is closed by vitreous fibers running parallel to the retinal plane. As with the interruption of fluid currents through the subretinal space, the SRRRD develops, and the thin membrane proliferates over the retinal break. They suspect that the proliferative membrane is a result from the fibroglial and retinal pigment epithelial hyperplasia (7). In 2007, Cho Hee Yoon et al. published an overview of fifteen suspected cases of spontaneous retina reattachments after rhegmatogenous ablations which is a real rarity in the current references. Examinations of these patients had confirmed the presence of diffuse alternations in retinal pigment inside the sharply limited convex edge. Lesions were placed in the lower retina in ten out of fifteen patients, limited to six or less hours. Changes on retina, associated with rhegmatogenous ablation, were present on the other eye in seven patients (8).

CONCLUSION

Spontaneous retina reattachment after a rhegmatogenous ablation (SRRRD) is a rare event that involves the relief of vitreoretinal traction, closure of retinal breaks, and reabsorption of subretinal fluid. Spontaneous retina reattachment after a total rhegmatogenous ablation is a rare phenomenon which must be taken into consideration in different diagnoses of the patients diagnosed with the diffuse alternation of retinal pigment inside the sharply limited convex edge in the fundus. In addition, the findings of small retina ruptures in non-vitrectomized eye can be associated to the spontaneous retina resolution after rhegmatogenous retina ablation.

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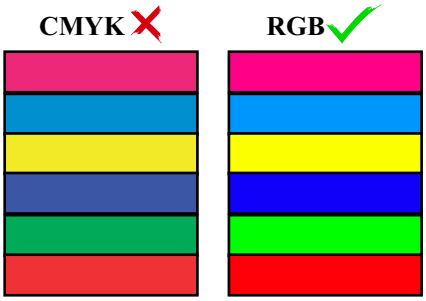

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