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Corticosteroid induced central serous retinopathy

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Abstract

A 50 year old female patient with Rheumatoid Arthritis was under Steroid therapy from past 5 years, further she developed blurring of vision and appearance of black spot in her right eye. Her fundoscopy and OCT findings revealed features of central serous retinopathy. Steroid therapy was withdrawn abruptly as there was no other known cause for CSR. After 3 months of withdrawal her symptoms got resolved. Amelioration after withdrawal confirmed CSR was induced by steroid. Rechallenge was not possible as recurrent occurrence of CSR may lead to a permanent vision loss. Educating patients regarding the possible adverse effect of drugs may help them in early detection and thereby making them avail for the management without any delay. Utilization of steroids needs proper surveillance & concerns and reporting of ADR's help to enhance patient's health related quality of life.

Introduction

Central serous retinopathy is a medical condition in which fluid buildup underneath the retina causing neurosensory retinal detachment resulting in loss of vision. The exact mechanism involved in the development of CSR is enigmatic, even though there are various hypothesis have been sophisticated. Individuals with type A personality, stress, raised levels of catecholamines, Cushing's syndrome, pregnancy and who got exposed from all forms of exogenic steroid admistration (PO, IV, IA, IN, intra vitreal) are at risk of developing CSR. CSR is most common in male patients with age between 30 and 50[1]. Steroid is a most common drug used in the management of Rheumatoid arthritis due to its action on inflammation. Although its use has been widely accepted, prolonged use at higher, moderate and lower dose will results in toxicity. So its utilization requires surveillance and concerns. One of the major ophthalmic complications induced by steroid is central serous retinopathy [2]. The proposed mechanisms through which steroid induces CSR are mainly by the ionic disturbances in retinal pigmented epithelial cells as well as by the alteration in permeability of choroidal vasculature [3].

Case Report

A 50- year old female patient came to hospital with the chief complaints of blurred vision in right eye than left, dryness in both eyes past 3 years and appearance of black spot in her right eye vision since 1 month. She is a known case of rheumatoid arthritis since 2002 with ILD past 3 years. Initially she was on steroid therapy for 4 years and there was >50% improvement, hence she stopped medication following which she was on ayurveda, acupuncture and homeopathy for 13 years. However there was no complete resolution and the symptoms got worsened. Later her allopathic therapy was again initiated with DMARDs regimen consisting of HCQ 300mg OD, Sulfasalazine 1.5gm BD with 3mg of Deflazacort once daily. After 2 months of prior treatment, Deflazacort was stopped and her therapy was continued with Methyl Prednisolone 4 mg daily for 5 years with other DMARDs. Since she was been complaining about appearance of black spot and blurred vision, it was suspected due to the exposure from any of her current treatment as she was taking those for a longer time. So there exist a differential diagnosis that whether this condition is caused by HCQ or corticosteroid treatment, because both were prone to be resulting in retinal toxicity. The primary fundoscopy examination gives the impression of central serous retinopathy in her right eye. The Optical Coherence Tomography was further performed to confirm the status of CSR in this patient (figure 1). Despite both are being retinal toxic, the previous literature evidences proves that long term effect of HCQ causes Bull's eye maculopathy and steroid therapy will results in central serous retinopathy. So from these objective and previous case evidences this patient was diagnosed to have CSR induced by long term effects of corticosteroids. Immediately Methyl Prednisolone was stopped without tapering and in order to prevent further ophthalmic complication hydroxychloroquine was

withheld. Her current RA therapy was modified by the addition of Tofacitinib 5mg OD, which is a JAK- inhibitor along with ongoing sulfaslazine 1.5mg BD. After three months of steroid withdrawal, central scotoma was subsided and gradually she regained her normal visual acuity.

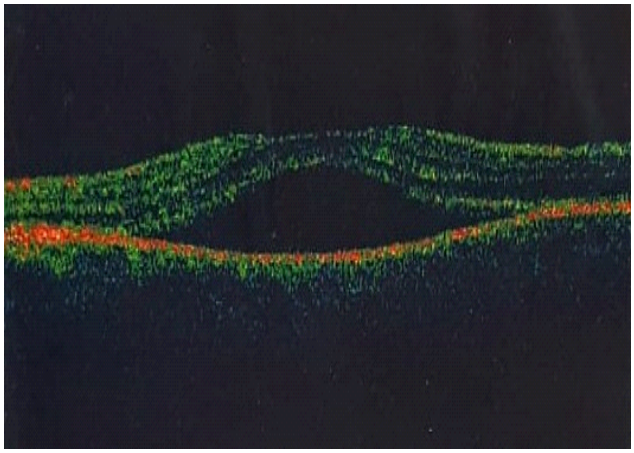

Figure 01: Optical coherence tomography showing central serous retinopathy

Discussion

Central serous retinopathy is an ophthalmic disease, characterized by accumulation of fluid under the retina causing serous retinal detachment, leading to blindness. Use of steroid is one of the etiological factors involved in the development of CSR. In the present case scenario, patient was on low dose steroid therapy for rheumatoid arthritis, past 5 years and was complaining about blurring of vision and appearance of black spot on her right eye vision since 1 month. Her Fundoscopy and OCT examination revealed features of central serous retinopathy. Immediately steroids were withdrawn because there were no known other etiologies causing this adverse drug reaction and her symptoms got resolved gradually after 3 months of withdrawal. Causality assessment using WHO-UMC Scale and Naranjo Scale revealed the ADR as "probable".

Among several hypothesis for the mechanisms of glucocorticoid induced CSR, the most discussed pathophysiology is the ability of corticosteroid to elevate the cyclic adenosine monophosphate in retinal pigmented epithelial cells leading to imbalances in ionic pump function or increasing the blood aqueous barrier permeability. All the alterations end up with interruption of outer blood retinal barrier leading to subretinal fluid accumulation [4].

As corticosteroid use is the prime precipitating factor for CSR, many clinical trials have assessed the efficacy of anti-corticosteroid agent in the management of CSR [5]. Nielsen et al has mentioned that the administration of mifepristone for the management of CSR in his case report was beneficial [6]. Nowadays, certain studies put forward the use of mineralocorticoid antagonists such as eplerenone for the management of CSR. Chin et al described in a case series of 120 patients with CSR that treatment using mineralocorticoid antagonist had a positive effect particularly in recalcitrant group [7], whereas Lotery et al found out that treatment with eplerenone dosen't have any clinical benefits and advised ophthalmologists to stop the drug for the management of central serous retinopathy [8]. Since it is a self-limiting disease, recovery is noted within 3 to 4 weeks after the abruption of the risk factors like corticosteroid use as well as by the life style modification[5]. In our case scenario, methyl prednisolone was withdrawn and patient was prescribed with beta-carotene, vitamins and minerals as supportive therapy. The recovery was observed after 3 months.

In the light of this case experience, we found out that steroid induced CSR can be effectively managed by the withdrawal of the offended agents without any above-mentioned treatment. Even though its time consuming, this mode of approach can avoid adverse effects. Hence mineralocorticoid antagonists are considered as secondary choice due to the associated adverse effects rather than its beneficial action.

Conflict of Interest

The author declares no potential conflicts of interest with respect to research, authorship, and/or publication of this article.

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