Pregnancy-associated Retinal Diseases

Naty C. Torres Soriano¹,² and Mitzy E. Torres Soriano¹,³,*

¹ Centro Médico Cagua, Unidad Oftalmológica “Dr. Torres López”, Cagua-Aragua, Venezuela
² Ophthalmology Department, Hospital Central de Maracay, Maracay, Venezuela
³ Centro de la Visión Gordon-Manavella, Rosario, Argentina

HYPERTENSION: PRE-ECLAMPSIA AND ECLAMPSIA

Ocular changes occur in 30-50% of patients with eclampsia and in 20-25% of patients with pre-eclampsia, and they consist in visual disturbances such as scotoma, diplopia, loss of visual acuity. These may be signs of alert for seizures in patients with pre-eclampsia. The effects of eclampsia and pre-eclampsia occur at the level of the retina, the choroid and the optic nerve.

Retinopathy in Toxemia: The changes correspond to those of hypertensive retinopathy: arteriolar spasms in 40-100% of patients with pre-eclampsia [1] (which are reversible in the postpartum period); diffuse narrowing (also reversible); and also hemorrhages, soft exudates, diffuse macular edema and papilledema may occur more frequently in women with chronic hypertension diagnosed before pregnancy [2]. These would indicate placental insufficiency, since the severity of retinal changes correlates with higher perinatal mortality rates. Therefore, induction of labor is recommended in cases of severe retinopathy. Inducing labor at the right time not only can improve the chances of survival for a baby born prematurely, but also can improve the outcome of systemic changes in the mother.

Localized Choroidal Infarction and Infarction of the RPE: Elschnig spots are one of the most common changes in toxemia. Choroidal insufficiency is a frequent ocular complication in patients with pre-eclampsia and eclampsia. Clinically, it presents as serous retinal detachments or yellow lesions at the level of the RPE [3, 4].

Retinal Detachment in Toxemia: It is a serous, exudative detachment that is

---

* Corresponding author Mitzy E. Torres Soriano: Centro de la Visión Gordon-Manavella, Montevideo 763, Rosario-Argentina; Tel: +54(341) 4400239; Email: mitzytorres@yahoo.com

Mitzy E. Torres Soriano, Gerardo García-Aguirre, Maximiliano Gordon & Veronica Kon Graversen (Eds.)
All rights reserved--© 2017 Bentham Science Publishers
usually bilateral and bullous. When the macula is not involved, it can be asymptomatic [3, 4]. It presents in 10% of patients with eclampsia and in 1-2% of patients with pre-eclampsia. It is not associated to fetal risk and it usually resolves after delivery. Macular RPE changes or optic atrophy only occur exceptionally or in rare cases, and lead to permanent loss of visual acuity.

Cases of temporary cortical visual impairment, serous bilateral retinal detachment [5] which resolves after 48 hours, unilateral vitreous hemorrhage and reversible blindness associated with cerebral venous sinus thrombosis and central retinal vein thrombosis have been identified in association with Hellep syndrome (hemolysis, elevated liver enzymes and low platelet count) in women with severe pre-eclampsia or eclampsia presenting on the 3rd trimester of pregnancy or in the postpartum period.

**DIABETIC RETINOPATHY**

Keeping glycemia and glycated hemoglobin (HbA1c) levels under control before conception and during pregnancy can reduce the risk of miscarriage [6, 7], birth defects and perinatal morbidity. Also, the status of retinopathy in diabetic women should be assessed and determined before conception. This is particularly important in the case of patients with severe nonproliferative or proliferative retinopathy, since laser photocoagulation can reduce progression during pregnancy [8]. Laser treatment of diabetic macular edema before pregnancy may be recommended, although the effects of pregnancy on macular edema have not been appropriately studied yet.

Progression of diabetic retinopathy in pregnant women depends mainly on the duration of diabetes and the severity of retinopathy at the beginning of pregnancy [8 - 11]. The baseline severity of retinopathy at the beginning of pregnancy is the main risk factor for the progression of the disease, according to the Diabetes in Early Pregnancy Study (DIEP). Women with a HbA1c level of more than 6 standard deviations (SD) above the control mean are at higher risk of progression of retinopathy in comparison to patients with a HbA1c baseline level within 2 SD of the control mean.

**CENTRAL SEROUS CHORIoretinopathy**

Central serous chorioretinopathy (CSCR) is caused by localized RPE dysfunction resulting in the accumulation of subretinal fluid (Figs. 1 and 2). It is more frequent in men between 20 and 50 years old. Pregnant women are more likely to develop CSCR.
In general, pregnant women with diabetic macular edema should not receive treatment during pregnancy since there is a high rate of spontaneous regression postpartum. Possible exceptions may include cases in which the fovea is threatened by fluid or severe progressive macular edema presents at the beginning of pregnancy [12].

CSCR associated to pregnancy may present at any stage in normal pregnancy, although it is more frequent in the third trimester, and it usually resolves in the postpartum period, leaving some subtle mottling of the RPE. It may recur in a future pregnancy. It has been associated to hormonal or hemodynamic changes, reduced osmotic pressure and hypercoagulable states [13].

**Fig. (1).** a and b) Fundus photograph and autofluorescence image showing typical central serous chorioretinopathy in left eye in sixth month of first pregnancy. c and d) Fundus photograph and autofluorescence after complete resolution. (Courtesy of Manuel Torres MD, Cagua, Venezuela).
Fig. (2). a) OCT shows area of detachment as hyporeflectivity between neurosensory retina and RPE of the same patient of Fig. (1). b) Shows retinal atrophy after spontaneous resolution of CSC with poor final visual acuity. (Courtesy of Manuel Torres MD, Caguas, Venezuela).

PRERETINAL OR RETROHYALOID HEMORRHAGES

These can develop spontaneously during normal pregnancies or may be induced by Valsalva maneuvers (vomiting, coughing, labor strain), and usually have a positive prognosis.

UVEAL MELANOMA

Generalized hyperpigmentation and pregnancy are closely related, probably because of hormonal reasons. Many cases of choroidal melanoma during pregnancy, as well as a high rate of growth of melanomas in patients diagnosed before conception, have been reported [14]. On the other hand, it is a known fact that pregnancy does not increase the risk of metastasis in women with melanoma diagnosed before conception, and no data were reported about cases of metastasis to the fetus.
CHANGES IN BLOOD COAGULATION

Disseminated intravascular coagulation (DIC): It develops during pregnancy in cases of premature rupture of membranes, complicated miscarriage, stillbirth and severe pre-eclampsia. It mainly affects the posterior submacular and peripapillary choroid with thrombotic occlusion of the choriocapillaris in these regions, resulting in changes of the RPE and serous retinal detachment in the macular and peripapillary regions [15]. If DIC resolves, the patient usually recovers vision and only mild RPE changes remain [15, 16].

Thrombotic thrombocytopenic purpura: It may develop in women who are pregnant for the first time. In 8% of cases, it includes visual changes due to thrombus formation in the choriocapillaris and secondary RPE ischemia. Clinically, symptoms are usually bilateral and consist of retinal serous detachments, yellow spots at the level of the RPE and localized arteriolar narrowing. After-effects include pigmentary changes of the RPE and Elschnig spots. In most cases, patients recover baseline vision after several weeks [17, 18].

OTHER CAUSES FOR BLINDNESS OR SEVERE LOSS OF VISION

During pregnancy, concentration and activity of clotting factors increase. The risk of stroke in pregnant women is 13 times higher compared to the risk in nonpregnant women. Retinal or choroidal vascular occlusions may also be indicators of this greater risk of vaso-occlusive disease [19].

CONFLICT OF INTEREST

The authors confirm that the authors have no conflict of interest to declare for this publication.

ACKNOWLEDGEMENTS

Declared none.

REFERENCES


[http://dx.doi.org/10.1001/archopt Humphry.00980050451008] [PMID: 5674802]

[PMID: 12838468]


[http://dx.doi.org/10.1056/NEJM19881223192501] [PMID: 3200277]

[http://dx.doi.org/10.1016/0039-6257(88)90172-5] [PMID: 3279558]

[PMID: 8586000]

[http://dx.doi.org/10.1016/0002-9394(82)90471-8] [PMID: 6178293]

[http://dx.doi.org/10.1016/S0002-9378(91)90608-5] [PMID: 1566772]

[PMID: 2008271]

[http://dx.doi.org/10.1001/archop Humphry.1991.01080050091036] [PMID: 2025170]


[http://dx.doi.org/10.1016/0028-2243(95)80003-4] [PMID: 7635240]

[http://dx.doi.org/10.1097/00006982-198909020-00006] [PMID: 2672208]

[PMID: 7195176]

[PMID: 7016963]

[http://dx.doi.org/10.1001/archneur.1985.0406010092030] [PMID: 2864911]