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ORIGINAL ARTICLE

The assessment of retina in pregnant women with myopia

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Abstract

OBJECTIVES: Myopia is associated with increased frequency of retinal degenerative changes which are the risk factors of intra- and postpartal ophthalmological complications. Aim of this study was to analyze the degenerative lesions detected in opthalmological examination (including peripheral retinal lesions) as a potential risk factors for eyes' status in terms of delivery in myopic women.

MATERIAL AND METHODS: 254 pregnant women affected with myopia underwent opthalmological examination as a screening method to examine retina. In case of any degenerative lesions, the qualification for laser photocoagulation treatment was performed. Furthermore, study group was divided into two subgroups due to presence or absence of the retinal lesions and opthalmological outcomes compared. Follow up examination was performed in every patient from the study group between 3 and 6 months after the delivery.

RESULTS: Among 508 eyes, retinal lesions were revealed in 69 women (121 eyes) what constituted for 23.8%. In remaining 185 patients results of the opthalmological examination were normal. Average maternal age was higher in group affected with degenerative lesions ($p<0.001$). Myopia in women with retinal lesions ranged between –0.25 and –12 dioptries (D), while in 43 cases of degenerative lesions qualified for laser photocoagulation this value ranged between –0.5 and –12.0 D (p=ns). Postpartal follow-up examination did not reveal any abnormalities in this group, as well.

CONCLUSION: Degenerative retinal lesions are present in one fourth of pregnant women. Both the severity and type of the lesions are not associated with severity of myopia. Among pregnant patients, retinal lesions occur in patients with more advanced maternal age. opthalmological examination remains an important prophylactic modality in retinal disorders, especially in primary retinal detachment due degenerative disorders.

INTRODUCTION

Myopia is a risk factor for retinal disorders which may have a crucial significance in antenatal management (e.g. prophylactic laser photocoagulation) and defining the mode of delivery. For decades, ophthalmological contraindications for vaginal delivery have been a subject of debates (Atassi 1972; Ciszewska *et al.* 2011; Ciszewska *et al.* 2011). In many cases, the term "severe myopia" was interpreted as an ophthalmological indication for an elective caesarean section. Several studies pointed that increased risk of eye damage during the vaginal delivery occurs only in limited number of retinal, degenerative lesions. The consensus of ophthalmological indications for an elective caesarean in pregnant women with eye disorders has been published in 2017 and clarifies this matter (Grabska-Liberek *et al.* 2017). Despite broad availability, in both ophthalomological and obstetrical literature, it seems to be rarely considered in clinical practice.

Thus, ophthalmological examination is not possible in every pregnant woman, specific groups of patients with increased risk of complications, such as: diabetes, glaucoma, corneal disorders, hypertension and myopia shall be identified and examined. These days, identification of the myopic patients may be extremely challenging due to the popularity of lenses – questions regarding any eye disorders shall be incorporated into obstetrical interview. When needed, ophthalmological examination is recommended in the first and third trimester. Despite many opinions that laser photocoagulation is not safe in pregnancy, any retinal lesions may be treated with this method.

Objectives

To analyze lesions revealed in ophthalmological examination (including retinal degenerative disorders) in pregnant women with myopia as a potential risk factor of opthalmological complications in terms of natural delivery.

MATERIAL AND METHODS

To exclude any retinal disorders, 254 pregnant women with myopia underwent ophthalmological examination across the gestation. Average maternal age was 30.2±4.37 (ranging between 19 and 40 years). Average gestational age at the date of ophthalmological examination was 28.4±5.07 (range 14–43 weeks). Myopia's severity was ranging between –0.25 D and –12.0 (average 4.44±2.45).

To evaluate retinal status, ophthalmological examination was performed in slit lamp with Volk Lens and Goldman goniolens after administration of 1% tropicamide solution. In case of any lesions, qualification for laser photocoagulation was performed as a preventive method from retinal detachment to reduce the risk of intra- and postpartal ophthalmological complications.

Regarding the severity of retinal lesions every patient underwent ophthalmological examination between 3 and 6 months after the delivery. Patients were informed that in case of any abnormal visual perception symptoms such as: flashes, flies or spider's web, an urgent ophthalmological consultation is needed. For subsequent data analysis, study group was divided into two distinct groups: with abnormal (group A) and normal retina (group B).

RESULTS

Among 508 eyes, retinal lesions were revealed in 69 women in 121 eyes (64 right and 57 left eyes) what constitutes for 23.8%. In remaining 387 eyes in 185 patients results were normal (data are summarized in Table 1).

Results of the opthalmological examination between group A and B were compared and summarized in Table 2. In group A myopia severity ranged between –0.5 D and –12.0 vs group B –0.25 and –12.0 (p=ns).

To decrease the risk of retinal detachment and ophthalmological complications during vaginal delivery, in 43 out 121 patients (35.5%) affected with degenerative retinal lesions, a laser photocoagulation was performed. The indication for this procedure were retinal holes that arose due to degenerative processes. Myopia among patients qualified for this procedure ranged between –0.5 D and –12.0 D. Postpartal follow-up examination did not reveal any ophthalmological complications in this

Tab. 1. Characteristics of retinal status in the study group.

Type of lesions	Right eye	Left eye	Together
No lesions	190	197	387
Lattice degeneration	6	5	11
'Snail track' degeneration	13	13	26
Tear	2	0	2
Retinoschisis	6	5	11
Peripheral retinal holes	33	31	64
Benign degenerations	2	2	4
State after retinal inflammation	2	0	2
Granuloma	1	0	1
Proliferation on the disc	0	1	1

Tab. 2. Maternal characteristics summarized and compared in group A and B.

Average ± SD	Group A (n=69)	Group B (n=185)	*p*-value
Maternal age (years)	31.38±5.01	29.90±4.03	$p<0.01$
Gestational age (weeks)	27.80±5.03	28.87±5.07	p=ns
Myopia (dioptries)	4.37±2.80	4.46±2.31	p=ns

group. In remaining 78 cases from group A there was no indication for laser treatment. In those patients expectant management was introduced. In 3–6 months after the delivery no degenerative lesions were diagnosed. Long term follow-up (until 5 years after the delivery) 4 patients were diagnosed with new degenerative, peripheral lesions and laser photocoagulation was needed.

DISCUSSION

Degenerative retinal lesions were detected in 27.2% of patients (23.8% eyes). The type and excerebation of the lesions implied various management: expectant or laser photocoagulation. Necessity of the laser procedure to prevent from intra- and postpartal ophthalmological complications remains controversial due to many complex processes across the vaginal delivery. Since the 1970s, there have been a several studies investigating the eyes' fundi in pregnant women to determine the safest way of delivery. (Karska-Basta *et al.* 2016; Katsulov *et al.* 1999; Kuba & Kroll 1997; Landau *et al.* 1995; Neri *et al.* 1985; Omoti *et al.* 2008; Prost 1996).

According to the literature, significant increase of intranucleal pressure during the second phase of vaginal delivery (Valsalva's maneuver during pressing) cause that vitreous body tightly adheres to the retina and the risk of retinal damage is significantly reduced (Ciszewska *et al.* 2011). Many experts do not recommend caesarean section as a preferred mode of delivery, even after previous retinal detachment due to peripheral degenerative lesions (Landau *et al.* 1995), both in patients with or without myopia (Juenemann *et al.* 2012).

These days, myopia with subretinal neovascularization (with Fuchs spot) in the macula is considered as an only absolute indication for the caesarean section due to high risk of subretinal haemorrhage resulting in sudden vision deterioration (Grabska-Liberek *et al.* 2017). However, this a very rare pathology among pregnant women. Numerous debates regarding relevance of laser photocoagulation before the natural delivery are precisely clarified in abovementioned consensus: to prevent from peripartal ophatolmological complications, peripheral degenerative lesions in the retina associated with increased risk of retinal detachment shall be treated with laser photocoagulation at least one month before the scheduled delivery. According to this publication, every pregnant patient with pathological myopia or peripheral degenerative lesions in the retina shall be counselled by ophthalmologist in the first trimester to determine the most appropriate management and safest mode of delivery. Prophylactic laser photocoagulation of the degenerative lesions at least one month before the labour prevents from any complications during natural delivery (laser treatment in the past medical history is not an indication for instrumental delivery or caesarean section). Ophthalmological examination in myopic pregnant women remains an important educational and prophylactic aspect. Every patient aware of retinal lesions shall remain under constant ophthalmological surveillance throughout the lifetime. Among the study group only 2 patients were diagnosed with post-inflammatory lesions in the macula after the toxocarosis and toxoplasmosis resulting in significant decrease in visual acuity. Even severe myopia or other causes of poor vision such as post-inflammatory scars resulting in monophtalmia are not an indication for caesarean section.

There were no ophthalmological complications or new onset retinal lesions after the delivery in the study group, regardless the mode of the delivery. Patients affected with myopia are afraid of eyesight deterioration across the pregnancy. Physiologically there is a vision deterioration due to increase of the thickness and curve of the cornea in the third trimester. This state spontaneously resolves in a few weeks after the delivery (Sheth *et al.* 2001). According to the studies, there is no correlation between eyesight deterioration and mode of delivery (Katsulov *et al.* 1999, Pizzarello 2003). In addition, most of the physicians recommend natural delivery in women affected with myopia and point that isolated myopia is not an indication for caesarean section or instrumental vaginal delivery (Chiu *et al.* 2015; Juenemann *et al.* 2012).

There is a lack of data in the literature regarding retinal complications in myopic patients who deliver naturally. Prost *et al.* investigated patients with severe myopia before and after the vaginal delivery – in case of degenerative lesions, the laser photocoagulation has been administered. In postpartal ophatalmoscopic examination there were no new onset lesions or signs of retinal detachment (Prost 1996). Similar results were published by Neri (Neri *et al.* 1985). Moreover, Mackensen *et al.* pointed that there is no correlation between retinal detachment and vaginal delivery in patients with severe myopia (Mackensen *et al.* 2014).

Noteworthy, in terms of myopia not only the retinal but also corneal pathologies may occur. Availability and awareness of refractive surgery cause that the number of ophthalmological procedures to cure the myopia is constantly growing. Corneal interventions may affect its status, thus the risk of decompensation during the fluctuating intranucleal pressure across the vaginal delivery shall be always considered (Park *et al.* 1992; Weinreb *et al.* 1988).

CONCLUSIONS

Ophthalmological examination remains a crucial aspect of retinal disorder prophylaxis, especially in cases of primary retinal detachment due to degenerative lesions. Our study shows that degenerative retinal lesions are present in about ¼ of myopic pregnant women. Both the type and severity of the lesions do not correlate with the progression of the myopia across the gestation. Noteworthy, degenerative lesions occur more frequently in pregnant women in more advanced maternal age.

REFERENCES

1 Atassi A (1972). Intraocular pressure variations during delivery. Geburtshilfe Frauenheilkd. **32**(10): 832–834
2 Chiu H, Steele D, McAlister C, Lam W (2015). Delivery recommendations for pregnant females with risk factors for rhegmatogenous retinal detachment. Can J Ophthalmol. **50**(1): 11–18.
3 Ciszewska J, Brydak-Godowska J, Moneta-Wielgoś J, Turyczyńska M (2011). Poród u pacjentek krótkowzrocznych – fakty i mity. [(Childbirth in patients with myopia – facts and myths.) (In Polish with English abstract]. Okulistyka. **14**(102): 41–42.
4 Ciszewska J, Moneta-Wielgoś J, Brydak-Godowska J, Turczyńska M (2011). Narząd wzroku w przebiegu ciąży- wybrane aspekty. [(The sight organ of in the course of pregnancy – selected aspects.) (In Polish with English abstract)]. Okulistyka. **14**: 27–29.
5 Grabska-Liberek I, Bakunowicz-Łazarczyk A, Ciszewska J, Dębski R, Kocięcki J, Mackiewicz J et. al (2017). Konsensus okulistyczno-położniczy w sprawie wskazań do rozwiązania porodu drogą cięcia cesarskiego z powodu zmian w narządzie wzroku. [(Guidelines of the Polish ophthalmic society. Ophthalmologic and obstetric consensus on the indications to cesarean delivery due to changes in the sight organ.) (In Polish with Polish abstract)]. https://www.ptgin.pl/index.php/lekarze/konferencje/aktualnosci/konsensus_okulistyczno_polozniczy_w_sprawie_wskazan_do_rozwiazania_porodu_droga_ciecia_cesarskiego_z_powodu_zmian_w_narzadzie_wzroku
6 Juenemann AM, Nowomiejska K, Oleszczuk A, Książek P, Oleszczuk J, Rejdak R (2012). Poród a schorzenia narządu wzroku [(Mode of delivery and eye diseases) (in Polish with English abstract)]. Ginekol Pol. **83**(8): 613–617.
7 Karska-Basta I, Tarasiewicz M, Kubicka-Trząska A, Miniewicz J, Romanowska-Dixon J (2016). Cesarean section and eye disorders. Ginekol Pol. **87**(3): 217–221.
8 Katsulov A, Todorova Ts, Denovska M, Iankov M (1999). Myopia and labor. Akush Ginekol (Sofiia). **38**(3): 51–54.
9 Kuba GB, Kroll P. Geburtsleitung und Indikationen zur Interruptio und Sectio caesarea bei Augenerkrankungen (1997). [(Labor monitoring and indications for abortion and cesarean section in eye diseases – an overview.) (article in German with English abstract)]. Klin Monatsbl Augenheilkd. **211**(6): 349–353.
10 Kubicka-Trzaska A, Karska-Basta I, Kobylarz J, Romanowska-Dixon B (2008). Oko a ciąża. [(Pregnancy and the eye) (in Polish with English abstract)]. Klin Oczna. **110**(10–12): 401–404.
11 Landau D, Seelenfreund MH, Tadmor O, Silverstone BZ, Diamant Y (1995). The effect of normal childbirth on eyes with abnormalities predisposing to rhegmatogenous retinal detachment Graefes Arch Clin Exp Ophthalmol. **233**(9): 598–600.
12 Mackensen F, Paulus WE, Max R, Ness T (2014). Ocular changes during pregnancy. Dtsch Arztebl Int. **111**(33–34): 567–575.
13 Neri A, Grausbord R, Kremer I, Ovadia J, Treister G (1985). The management of labor in high myopic patients. Eur J Obstet Gynecol Reprod Biol. **19**(5): 277–279.
14 Omoti AE, Waziri-Erameh JM, Okeigbemen VW (2008). A review of the changes in the ophthalmic and visual system in pregnancy. Afr J Reprod Health. **12**(3): 185–96.
15 Park SB, Lindahl KJ, Temnycky GO, Aquavella JV (1992). The effect of pregnancy on corneal curvature. CLAO J. **18**(4): 256–259.
16 Pilas-Pomykalska M, Czajkowski J, Oszukowski P (2005). Zmiany w narządzie wzroku w przebiegu ciąży. [(Ocular changes during pregnancy.) (In Polish with English abstract.)] Ginekol Pol. **76**(8): 655–660.
17 Pizzarello L (2003). Refractive changes in pregnancy. Graefe's archive for clinical and experimental ophthalmology graefes. Arch Clin Exp Ophthalmol. **241**(6): 484–488.
18 Prost M (1996). Wysoka krótkowzroczność a poród. [(Severe myopia and delivery.) (In Polish with English abstract)]. Klin Oczna. **98**(2): 129–131.
19 Sheth B, Mieler W (2001). Ocular complications of pregnancy. Curr Opin Ophthalmol. **12**(6): 455–463.
20 Weinreb RN, Lu A, Beeson C (1988). Maternal corneal thickness during pregnancy. Am J Ophthalmol. **105**(3): 258–260.