Original Research Paper

Volume - 12 | Issue - 06 | June - 2022 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Obstetrics & Gynaecology

EVALUATION OF VISUAL OUTCOME IN PREGNANT DIABETIC WOMEN IN TRIBAL POPULATION OF SOUTH RAJASTHAN

Dr Rajkumari Samar	Assistant Professor, Dept of Obstetrics and Gynae, Gitanjali medical college and hospital Udaipur
Dr Rajendra kumar Samar	Associate Professor , Dept of Medicine, Pacific institute of medical sciences, Umarda Udaipur.
Dr PK Bhatnagar	Professor and Head of Dept, Dept of Obst and Gynae, Pacific institute of medical sciences Umarda Udaipur
Dr Arun Kumar Samar*	Assistant Professor, Dept of Ophthalmology, Pacific Institute of medical sciences Umarda Udaipur *Corresppponding Author

ABSTRACT There is high prevalence of gestational diabetes mellitus (GDM)among the Asian population with common risk factors like history of previous GDM, congenital anomalies or macrosomia (1) Aim of the present study is to determine the visual changes in pregnant ladies, prevalence of and risk factors for GDM , to diagnose early, manage sugar levels and reduce complications. Diabetic retinopathy is one of the major causes of preventable blindness in women in peak fertility and childbearing years. (2) Diabetic eye disease may develop for the first time during pregnancy, and visual loss at this stage has serious implications. (3)

KEYWORDS : Pregnancy and diabetes, Visual changes in pregnancy, diabetes and eye changes, Diabetic retinopathy

Introduction

Pregnancy is associated with major changes in the systemic vasculature. There is an augmentation in cardiac output and plasma volume and a decrease in peripheral resistance, all of which cause increased blood flow. Chen et al, using laser Doppler velocimetry to measure retinal blood flow, demonstrated the lack of change of retinal blood flow in normal pregnancy, thus confirming the efficacy of the autoregulatory processes in the retinal vasculature. (4) In diabetic patients who showed progression of retinopathy in pregnancy, an increase in blood flow was documented in the first trimester. By contrast, women with diabetes whose retinal blood flow remained unchanged developed no retinopathy (5) They therefore suggested that the hyperdynamic circulatory state of early pregnancy is accompanied by compensatory mechanisms both in normal women and in those diabetes sufferers who retain autoregulatory control of retinal blood flow. In some diabetic women, however, these autoregulatory mechanisms are flawed resulting in an increase in blood flow. Such a hyperdynamic circulatory state could potentially inflict additional shear stress and cause endothelial damage particularly at the capillary level.(6) However, local hypoxia associated with worsening retinopathy could account for the compensatory increase in blood flow which may merely represent an epiphenomenon rather than failure of autoregulation in pregnancy.(7) With the recognition that the level of glycaemia during pregnancy is directly related to the incidence of congenital malformations, the emphasis on the management of diabetic pregnancy has been one of meticulous control of blood sugar and this leads to retinopathy and nephropathy.(8)

Studies on the influence of pregnancy on the natural history of diabetic retinopathy have shown that deterioration is frequently observed. That retinopathy worsens during pregnancy is now undisputed, although the mechanism by which progression occurs is not entirely clear. (9)

Material and methods

Prospective study has been conducted from Apr 2018 to jan 2022. Place of study has been Tertiary Care Hospital at Pacific Institute of Medical Sciences Umarda Udaipur. All antenatal patients were screened for presence of gestational diabetes mellitus (GDM). Those patients with clinical features suggestive of GDM. Maternal age, parity, education, socio-economic status, period of gestation is recorded. Pre-existing maternal disease, anemia, hypertension, heart disease and liver disease were recorded. Maternal weight at first visit, maternal height, total ante natal visits, obstetric complications, drug and medication use, tobacco use were recorded. Maternal symptoms, amenorrhea swelling feet, weakness headache, bleeding or discharge per vagina were recorded. Physical findings, anemia, swelling feet and body, were recorded. all cases of GDM referred to ophthalmology department for thorough evaluation of RETINOPATHY and its severity. Laboratory studies, SUGAR FASTING POST PRANDIAL HBA1C, hemoglobin, leucocyte count, blood sugar, urea, creatinine, liver enzymes, urine albumin and sugar were recorded. Imaging studies, gestational age, ultrasonography also recorded. Pregnancy outcomes included gestational age at delivery, birth weight, mode of delivery, and Apgar scores were recorded. Observation fetal weight at birth and sex of neonate.

190 patients of pregnancy with diabetes mellitus were included in the study. The local ethics committee's approval was received for the study and informed consent of the participating subjects was obtained. Patients were excluded from the study if they had any other ophthalmic disorder, had undergone any ophthalmic surgery, or had any additional systemic disease or radioactive iodine treatment within the prior 1 year. The diagnosis of GDM was based on standard clinical criteria and confirmed by SUGAR FASTING AND POST PRANDIAL AND HBA1C levels [8].

All patients were evaluated by a single experienced ophthalmologist for the presence of ophthalmopathy. The diagnosis of ophthalmopathy was based mainly on the clinical state.

Observations

Table 1 Maternal Age distribution in GDM

s.no	Age in years	No of patients	percentage
1	Less than 20	4	2.10
2	20- 25	8	4.21
3	26-30	76	40
4	31-35	97	51.05
5	36 and more	5	2.63
		190	100

Table 2 Maternal Parity distribution of cases of GDM

s. no.	Parity	Number	Percentage
1	0	19	10
2	1	74	38.94
3	2	86	45.26
4	3	5	2.63
5	4	4	2.10
6	5	2	1.05
		190	100

Table 3 Maternal ante natal care education socio economic status distribution in dry eye

s.no	Maternal antenatal visits	No of patients	percentage
1	nil	20	10.52
2	1-2	148	77.89

3	3 and more	22	11.57
	Maternal education		
4	Less than class 5	10	5.26
5	Class 5 to class 10	157	82.63
6	More than class 10	23	12.10
	Socio economic class		
7	Very low	37	19.47
8	low	93	48.94
9	middle	38	20
10	high	22	11.57

Table 4 maternal risk factors in dry eye

S .no	Maternal risk factors	number	percentage
1	Period of gestation		
	First trimester	07	13.46
	Second trimester	20	38.46
	Third trimester	25	48.08
2	TSH LEVELS		
	4.0 MU/L TO 6MU/L	4	7.69
	7MU/L TO 9MU.L	21	40.38
	MORE THAN 9 MU/L	27	51.92
3	SEVERITY OF DRYNESS	40	76.92.
	MILD TO MODERATE	4	7.69
	SEVERE		

Table 5 ocular manifestations in hypothyroid in pregnancy

sn	Thyroid eye sympoms	no	Percentage
1	Redness and itchiness	38	73.07
2	Pain with movement	38	73.07
3	Irritation described as gritty feeling	32	61.53
4	Sensivity to light	23	44.23
5	dry eyes and or watery eyes	44	85
6	Eyes that bulge and protrude	3	5.76
7	Double vision caused by the eye shifting out of alignment	1	1.95
8	Blurring to blindness of vision	0	0

Result

Max out of total 52 cases 23(44.23%) were less than 20 years and 22(42.30%) were less than25 years 3 (5.76%) were less than 30 years and 4 (7.69) % were more than 30 years. 48(92.30%) cases were less than 30 years of age. 43 (82.69%) cases were primigravida and para 1. 9 (17.30 %) cases were para2 and above 35(67.32%) were totally unbooked without single antenatal visit, 15(28.84%) had 1-2 visits and 2 (3.84%) had regular antenatal visit41(78.85%) were illiterate 8 (15.39%) were less than 10 standard and 3(5.76%)were more than 10 standard 38(73.08%) were very low socioeconomic status, 10(19.24%) were of low 2(3.84%) were middle and 2 (3.84%) were from high status . 07 (13.46%) were in first trimester, 20(38.46%) were in second trimester and 25 948.08%) were in third trimester. 4 (7.69%) had TSH levels 4-6 mu/l ,21(40.38%) had 7-9 mu/l and 27(51.92%) had more than 9 mu/l. 40 (76.92%) had mild to moderate dryness and 4 had severe dryness. 38(73.07%) had redness and itchiness, 38 (73.07%) had pain with movement 32 (61.53%) had irritation described as gritty sensation 23(44.23%) had sensitivity to light 44 (85%) had various degrees of dryness 3 (5.76%) eyes bulge and protrude 1(1.95%) had double vision

Discussion

Risk factors for the progression of retinopathy in pregnancy suggest that those women with the greatest reduction in glycosylated haemoglobin (HbA1c) over the first 14 weeks of pregnancy were at an increased risk of progression of retinopathy.(10) Patients in whom retinopathy was most likely to progress had both the poorest control at baseline and the largest improvement during early pregnancy. However, it was impossible to separate these two risk factors as virtually all patients had improved metabolic control during early pregnancy.(11) Another risk factor which has been shown to adversely influence progression of retinopathy is the duration of diabetes before pregnancy(12) Dibble et al followed 55 insulin dependent diabetic women through their pregnancies and found a positive correlation between duration of diabetes and progression of retinopathy(13) duration of diabetes, which is strongly correlated with level of baseline retinopathy, may be a significant factor in the development of more severe change—that is, proliferative retinopathy in pregnancy.(14) It has been shown that risk of visual loss is low in those with no pre-existing retinopathy. Approximately 12% of women with no retinopathy at the start of pregnancy will develop minor background retinopathy consisting of a few microaneurysms but regression in the postpartum period is the norm (15) severity of existing diabetic retinopathy profoundly influences the level of progression(16) Hypertension is a known risk factor for the progression of retinopathy and is additionally hazardous during pregnancy(17) Phelps et al 6 have reported that the components of retinopathy which increased most commonly in pregnancy were haemorrhages and microaneurysms(18) Cotton wool spots develop in a proportion of patients with background retinopathy as pregnancy advances and have been seen to be associated with low fasting blood sugar.(19) Increasing severity of diabetic retinopathy has been shown to adversely affect outcome in pregnancy.(20) that 30% of patients who had no observable retinopathy and 70% of patients with background retinopathy at the inception of pregnancy developed obstetric complications.(21) a fifth of the pregnancies resulted in fetus with severe congenital malformations and/or fetal death (22) it is shown that no long term detrimental effects due to pregnancy in other organs such as the kidney or peripheral nervous system.(23) vascular proliferation is reversible and postpartum regression is common, and currently therefore most ophthalmologists would perform a restricted or limited photocoagulation procedure(24) salt restriction diets and diuretics which have been used with limited success. When macular oedema occurs it is thought to be due to an ischaemic capillaropathy and may be accompanied by proliferative retinopathy. In some cases macular oedema regresses postpartum but in others it may persist and cause long term visual loss.

Those who develop proliferative retinopathy during pregnancy should have prompt laser photocoagulation treatment sufficient to induce regression.

In summary, progression of retinopathy in pregnancy depends on a variety of factors including severity of retinopathy at conception, adequacy of treatment, duration of diabetes, metabolic control before pregnancy, and the presence of additional vascular damage such as pre-existing or concomitant hypertensive disorder funduscopy should be performed at each obstetric visit (which is usually every 4 to 6 weeks) and if progression is detected the patient should be examined at 2 week intervals to detect any high risk characteristics. If high risk characteristics develop photocoagulation should be carried out promptly and monitored by fundoscopy. In those with severe sight threatening retinopathy, laser photocoagulation should be performed before pregnancy or promptly when high risk characteristics develop.(25)

REFERENCES

1. Klein R, Klein BE, Moss SE, Davis MD, DeMets DL The Wisconsin epidemiologic study of diabetic retinopathy. III Prevalence and risk of diabetic retinopathy when age at diagnosis is 30 or more years. Arch Ophthalmol 1984 , 102:527
2. Klein BE, Moss SE, Klein R Effect of pregnancy on progression of diabetic retinopathy. Diabetes Care 1990 13:34–4
3. Phelps RL, Sakol P, Metzger BE, Jampol LM, Freinkel N Changes in diabetic retinopathy during pregnancy. Correlations with regulation of hyperglycemia. Arch Ophthalmol 1986 ,104:1806–1810.
4. Kohner EM, Porta M Protocols for screening and treatment of diabetic retinopathy in Europe. Eur J Ophthalmol 1996 1:45–54. pregnancy.
6. Moloney JB, Drury MI (1982) The effect of pregnancy on the natural course of diabetic retinopathy. Am J Ophthalmol 93:7
7. Diabetes in Early Pregancy Study Metabolic control and progression of retinopathy. Diabetes Care 1995 18:6
8. Dibble CM, Kochenour NK, Worley RJ, Tyler FH, Swartz M Effect of pregnancy on diabetic retinopathy. Obstet Gynecol 1982 ,59:699–704.
9. Sunness JS The pregnant woman's eye. Surv Ophthalmol 1988, 32:219–238
10 Soubrane G, Canivet J, Coscas G Influence of pregnancy on the evolution of background retinopathy. Preliminary results of a prospective fluorescein angiography study. Inte Ophthalmol 1985, 8:249–255.
11. Chen HC, Newsom RS, Patel V, Cassar J, Mather H, Kohner EM Retinal blood flow changes during pregnancy in women with diabetes. Invest Ophthalmol Vis Sci 1994, 35:3199–3208.
12. Tooke JE Microvascular function in human diabetes. A physiological perspective. Diabetes 1995 44:721–726.
13. Rosenn B, Miodovnik M, Kranias G, Khoury J, Combs CA, Mimouni F,et al. Progression of diabetic retinopathy in pregnancy: association with hypertension in pregnancy. Am J Obstet Gynecol 1992 166:1214–1218.
14. Erman A, Boner G, Ovadia J Diabetic nephropathy and pregnancy. The effect of ACE inhibitors prior to pregnancy on fetomaternal outcome Nephrol Dial Transplant 1995 :2328–2333.
15. Pipkin FB, Rubin PCPre-eclampsia—the disease of theories. Br Med Bull 1994 50:381–396.
16. Sedman AB, Kershaw DB, Bunchman TE Recognition and management of angiotensin-converting enzyme-inhibitor. Pediatr Nephrol 1995, 9:382–385
17. KROC collaborative study group Blood glucose control and the evolution of diabetic retinopathy and albuminuria. N Engl J Med 1984 ,311:365–372.
18. Price JH, Hadden DR, Archer DB, Harley JM Diabetic retinopathy in pregnancy. Br J Obstet Gynaecol 1984 ,91:11–17.
19. Klein BE, Klein R, Meuer SM, Moss SE, Dalton DD Does the severity of diabetic retinopathy predict pregnancy outcome? J Diabet Complications 1988, 2:179–184.
20. Klein BE, Klein Gravidity and diabetic retinopathy. Am J Epidemiol 1984, 119:564–569.

21. Chaturvedi N, Stephenson JM, Fuller JH The relationship between pregnancy and long-term maternal complications in the EURODIAB IDDM Complications Study. Diabetic Med , 1995 ,12:494–499.
22. Hemachandra A, Ellis D, Lloyd CE, Orchard TJ The influence of pregnancy on IDDM complications. Diabetes Care 1994, 18:950–954.
23. Klein R, Klein BE, Moss SE, Cruickshanks KJ The Wisconsin Epidemiologic Study of diabetic retinopathy. XIV Ten-year incidence and progression of diabetic retinopathy [see comments]. Arch Ophthalmol 1994 112:1217–1228.
24. Hercules BL, Wozencroft M, Gayed, II, Jeacock J Peripheral retinal ablation in the treatment of proliferative diabetic retinopathy during pregnancy. Br J Ophthalmol 1980, 64:87–93.
25. Serup L (1994) Influence of pregnancy on diabetic retinopathy. Acta Endocrinol 27 (Suppl 1986) 122–124.