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Case Report on the Management of Focal Segmental Glomerulosclerosis in Pregnancy: Challenges and Outcomes

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Abstract: ***Focal segmental glomerulosclerosis FSG is a subtype of nephrotic syndrome affecting the glomeruli, with significant implications during pregnancy. This case report discusses the management of a 37 - year - old woman diagnosed with FSG prior to pregnancy. Her treatment involved a multidisciplinary team approach with the involvement of nephrologists and obstetricians to monitor proteinuria, hypertension, and fetal growth. Through timely interventions, including medication adjustments and early delivery, the pregnancy resulted in a favourable outcome. This case underscores the importance of individualised care in managing high - risk pregnancies complicated by chronic kidney disease.***

Keywords: pregnancy, pre - eclampsia, chronic kidney disease, focal segmental glomerulosclerosis, nephrotic syndrome

1. Introduction

A subtype of idiopathic nephrotic syndrome is focal segmental glomerulosclerosis (FSG). This affects the glomerulus initially and then moves on to the tubulointerstitium and renal vessels.[1] Initially this was considered as a single disease but now encompasses various subtypes. Histologically, focal segmental glomerulosclerosis involves segmental obliteration of glomerular capillaries by extracellular matrix.[2]

Pre - existing glomerular disease tends to flare up or worsen during pregnancy. Increased monitoring and expert management is important as chronic kidney disease tends to be associated with adverse pregnancy outcomes like pre - eclampsia, preterm labour, and fetal growth restriction.[3]

Anatomical during pregnancy changes include an increase in renal size and marked dilatation of the pelvicalyceal system. There is an increase in renal blood flow in early pregnancy and reaches a maximum by the second trimester. In the third trimester, this falls by around 50%. The glomerular filtration rate (GFR) increases significantly and, therefore, serum levels of creatinine and urea fall. It is normal to have proteinuria in pregnancy but more than 300mg/24 hours is pathological.[8]

The best pregnancy outcome occurs when there is minimal proteinuria, no hypertension, and a preservation of renal function. This is why pre - pregnancy counseling is pertinent to inform a woman of potential risks and thereby clinically optimising these before embarking on pregnancy.[4]

This case report aims to highlight the management strategies and challenges in handling the high-risk pregnancies complicated by focal glomerulosclerosis emphasising the importance of multidisciplinary approach.

This case report also provides valuable insight into the successful management of FSG in pregnancy, offering a reference for clinicians facing similar high risk pregnancies.

2. Case Report

A 37 - year - old Para1 with a previous vaginal delivery was diagnosed 3 years after her first pregnancy to have focal glomerulosclerosis confirmed by kidney biopsy. The patient was also on Ramipril as a result of chronic hypertension. Blood pressure was well controlled before pregnancy.

Had booking bloods and urine done, urine showed proteinuria and a subsequently checked Urine protein creatinine ratio (UPCR) was around 400. The patient was also started on low molecular weight heparin (LMWH) due to scoring for antenatal risk factors for venous thromboembolism. Albumin checked before starting LMWH and was found to be normal.

Was referred to the maternal medicine unit for subsequent management. The maternal medicine was a multi disciplinary team consisted of an obstetrican with a special interest in maternal medicine, an internal medicine with maternal medicine interest, maternal medicine midwives and involvement of nephrologist to make a maternal care plan in pregnancy and postnatal period. The patient was seen around 12 weeks in maternal medicine, was started on Asprin due to a high risk of fetal growth restriction, and was booked for a placental screen ultrasound in pregnancy – screening for pre - eclampsia. Was found to have a UPCR of 630 since the last visit. Ramipril was discontinued and the patient was asked to restart the same after delivery. Patient was given a home BP monitor and was also warned and given information of red - flag symptoms to be reported with regard to the risk of pre - eclampsia. Due to the high risk for fetal growth restriction, this patient had growth scans in pregnancy.

The patient had a normal growth scan at 32 weeks of pregnancy but was found to have stable but low concentrations of albumin around 17g/l. The patient had a subsequent discussion regarding early delivery due to low albumin as BP remained stable in pregnancy without medication. The multi - disciplinary team meeting recommended the patient was to have a PLGF[5] ratio tested a biomarker used in predicting the risk of pre - eclampsia. The

test result came back as 2 showing a very low likelihood of patient developing pre - eclampsia.

Patient was 35 weeks pregnant at this point with a normal growth scan and growth trajectory of baby. Hypoalbuminemia and risk of placenta abruption was discussed with the patient in maternal medicine clinic. Patient accepted an earlier delivery in this pregnancy at 38 weeks due to this risk and a small risk of baby being admitted to the neonatal unit as a result of the same. Also accepted to have LWMH 6 weeks after delivery due to high risk of venous thromboembolism.

The patient went on to have an induction and then a vaginal delivery of a baby of birth weight 2800g with blood loss of 500ml at delivery. Post - pregnancy the patient was subsequently referred to nephrology for further management.

The patient also maintained normal blood pressure throughout pregnancy, intrapartum and postnatally.

3. Discussion

The defining feature of focal segmental glomerulosclerosis is proteinuria. It is usually accompanied by hypoalbuminemia, hypercholesterolemia, and peripheral oedema. In adults, nephrotic syndrome is defined as a urine protein level of more than 3.5g/dl. Approximately 50 - 60% of adults who have focal segmental glomerulosclerosis have proteinuria at presentation.[6]

There seems to be a direct correlation between the degree of proteinuria in pregnancy as a result of nephrotic syndrome and maternal and fetal complications such as pre - eclampsia, fetal growth restriction and preterm delivery. Hence management in a multi - disciplinary team unit with expert input is highest importance.[7] Interestingly it has been found inversely as well that low birth weight babies have a higher tendency to develop adult hypertension and chronic kidney disease which followed a cohort of two men and two women and with average birth weights of 450g - 1420g.[8]

It is found generally in the absence of hypertension like our case above, there are usually no adverse events in pregnancy.[9] However a systematic review and meta - analysis that was done found that there was a 10 fold greater risk of developing pre - eclampsia in women with chronic kidney disease and overall the risk was around 40%.[10]

However, in a study done at Parkland Memorial hospital over an 18 year period patients were studied for the common complications which included maternal complications such as anemia, chronic hypertension and pre - eclampsia and perinatal outcomes such as preterm delivery, fetal growth restriction and low birth as a result of both, it was found that out of the 11 women who had severe kidney disease seven had live preterm deliveries after 26 weeks of gestation. Four of the six women had stable renal function throughout pregnancy went on to develop end stage renal disease within 4 years of delivery.[11]

Management is challenging in pregnancy as they are at a higher risk of developing venous thromboembolism and hence will need initiation of antenatal low molecular weight heparin and postnatal low molecular weight heparin as well.[12]

Pregnancy can affect renal disease and its progression as well. The long term effects of pregnancy on renal disease depends on the stage of the disease and serum creatinine level. It was found that a serum creatinine level of more than 1.4mg/dl had a greater likelihood to deteriorate renal function further in both pregnancy and postpartum. A study of 70 women with renal disease showed those that entered pregnancy with a creatinine level above 2.4mg/dl 31 percent patients had a decline in their renal function which persisted at 6 months postpartum and 11% progressed to end - stage renal disease at the end of the year.[13]

4. Conclusion

This case highlights the critical importance of multidisciplinary collaboration in managing pregnancies complicated by focal glomerulosclerosis. Through careful monitoring, timely interventions and active involvement of the patient in her care plan both maternal and fetal outcomes were optimised. This case serves as a reminder of the importance of early counselling and continuous management in similar high risk pregnancies.

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