Case Report

Pregnancy in a 24 Year Old Nigerian Woman with Chronic Kidney Disease: Challenges and Outcome

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ABSTRACT

There is increasing incidence and prevalence of chronic kidney disease worldwide. The developing countries including Nigeria are facing greater challenges because of the prevailing poverty and high burden of infectious diseases. There are various prevalent co-morbid conditions that influence and are influenced by the status of the kidney function of the patient. These conditions pose some peculiar challenges and management of the challenges will determine the outcome. The aim of this report is to highlight the challenges of pregnancy in women with chronic kidney disease and possible outcome. We report a 24 years Nigerian woman diagnosed with chronic kidney disease who presented with 10 weeks gestation and deteriorating kidney function. Her management was associated with various challenges including non adherance to medications and not regular to follow up visits. She later developed ecclampsia and had intra uterine fetal death. She had various interventional measures including haemodialysis. She recovered kidney function appreciably but has defaulted follow up since discharge.

KEY WORDS: pregnancy, CKD, challenges, outcome, hypertension, proteinuria

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INTRODUCTION

Conception and successful pregnancy are associated with various haemodynamic changes. The kidney plays important role to ensure that these changes lead to a successful end point in pregnancy without jeopardizing the total body functions. These changes include increase in renal blood flow, decrease in blood pressure, tachycardia, increase in glomerular filtration rate, decrease in level of serum creatinine and urea. There are also associated glycosuria, bicarbonaturia, hypercalciuria, increases in erythropoietin, rennin and vitamin D activities[1, 2]. The kidneys undergo significant physiological and structural changes in other to achieve this extra burden imposed on it by pregnancy. A successful pregnancy is however dependent on the functional state of the kidneys and their ability to adapt to these changes. Diseased kidneys are not able to make these adaptations[1].

Chronic kidney disease (CKD) is a common clinical condition with an increasing prevalence and incidence globally. A number of comorbidities including pregnancy have been reported in patients with CKD and prognosis is poor, with many patients experiencing disease progression[3]. Recognizing the factors associated with CKD progression enables high risk patients like pregnant patients to be identified and given more intensive treatment if necessary. Though CKD has been associated with infertility resulting from menstrual irregularities, anovulation, loss of libido and hormonal abnormalities, pregnancy has been reported in 1 - 8% of chronic kidney disease women on dialysis[1, 4, 5].

The outcome of pregnancy is variable and usually associated with various complications. The effect of pregnancy on the natural history of chronic kidney disease is a common problem in nephrology practice[6]. Thus successful pregnency is dependent on early detection and management of these limitations. There is no report so far on pregnancy in chronic kidney disease patients in Nigeria.

This report is to highlight the challenges and outcome of pregnancy encountered in a 24 years old Nigerian woman with chronic kidney disease.

INDEX CASE

Mrs. ML is a 24 years old woman, a primigravida with 10 weeks gestation. She was referred by the attending obstetrician in another hospital on account of hypertension and azotaemia in pregnancy. She was diagnosed with chronic kidney disease (stage 3) three years prior to presentation; however she was not adherent to the prescribed medications and defaulted follow up for over 2 years.

On presentation she complained of decrease in urine volume. This was not associated with haematuria, dysuria, body swelling, fever, vomiting or body pain but she complained of generalized headache and dizziness.

She had viral hepatitis 5 years prior to presentation and was diagnosed of hypertension 4 years prior to presentation. She was not a diabetic, sickler and had no previous blood transfusion. She neither used mercury containing cosmetics nor herbs and analgesic. Her parents were alive but father had hypertension and diabetes mellitus. She was a youth corper, newly married and her menstral cycle was usually normal. Her medications prior to presentation were alpha methyl Dopa (250mg thrice daily), proguanil 100mg daily),

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ferrous sulphate 2 tabs thrice daily), folic acid (5mg daily), and calcium lactate (2 tabs daily).

On examination she was mildly pale. There was no peripheral oedema.
Her pulse was 72 beats/minute, full volume; regular and arterial wall was not thickened.
The blood pressure was 170/130mmHg sitting and standing.
The cardiac apex beat was heaving and located at the 5th left intercostals space mid clavicular line. 1st and 2nd heart sounds were heard.
Other systems examined were normal.

A diagnosis of hypertension in pregnancy with background chronic kidney disease was made.
She was counselled for admission into the ward but she declined. The clinical condition and possible outcome were explained to her and her spouse.
Obstetrician and dietician were invited to co manage her.
She was continued on her medication, counselled to adhere to her prescription, reduce her salt intake and be regular to follow up.

The detailed result of investigations was documented below:
Urinalysis revealed proteinuria 3+
Urine microscopy was normal and culture yielded no growth.
The packed cell volume was 29%, haemoglobin was 9.2g/dl., total white blood cell count was 6.1 x 10^9cells/l, neutophil was 67%, lymphocyte was 33%, blood film showed microcytic hypochromic red blood cell, platelet was adequate.

The serum sodium was 188mmol/l, potassium 6.5mmo/l, chloride 103mmol/l, bicarbonate 27mmo/l, urea 9.9mmo/l, creatinine 354umol/l, uric acid 170mmol/l. calcium 2.3mmol/l, phosphate 7.1mmo/l, total protein 68g/l, albumin 37g/l.
Total cholesterol was 6.2mmo/l. HDL 2.1mmol/l, LDL 3.39mmo/l, VLDL 0.7mmol/l, fasting blood sugar 6.3mmol/l, OGTT normal, LFT normal, HBsAg negative, HCV negative.

Abdomino pelvic ultrasound study showed kidney sizes of 10.0 x 3.5cm and 9.2x3.9cm right and left respectively, with loss of corticomedullary differentiation. A singleton active gestation at 10 weeks was found. Other abdomino pelvic organs were normal.

She was given intravenous calcium carbonate and 50% dextrose in water. She continued her medications and was counseled to adher to the prescription.
A week later on follow up her blood pressure was 150/100mmHg. The dose of alpha methyl Dopa was increased to 500mg thrice daily. Tabs nifedipine 20mg daily and vasoprin 75mg was added. She was commenced on caps astefer and subcutaneous erythropoitien 4000unit twice weekly. She was advised for weekly follow up by the nephrologist and obstetrician, with electrolyte, urea, creatinie, PCV, urinalysis, and pelvic scan every forthnight.

She was regular to follow up for 6 weeks and her parameters then were BP 130/85mmHg, serum potassium 3.8mmo/l, urea 5.8mmol/l, creatinine 201umol/l, pelvic scan showed normal active gestation at 17 weeks.

She travelled and was not able to attend clinic for 4 weeks. She subsequently presented with seizure and breathlessness of a day duration. Seizure was generalized tonic clonic associated with postictal sleep and breathlessness. She had discontinued her medication a week prior to presentation.
She was acutely ill looking, restless, conscious but in respiratory distress. She was moderately pale and had marked bilateral pedal and periorbital oedema.
The pulse rate was 102/minute, blood pressure 180/110mmHg.
She had bilateral basal fine crepitation and gravid abdomen at 20 weeks symphyso fundal height.

The diagnosis was ecclampsia in background CKD.
She was admitted and her medications recommenced. Intravenous diazepam in 5% dextrose water infusion was commenced. The seizure was controlled.

Results of investigations were as follows:
Urinalysis showed proteinuria 3+, blood 2+, nitrite +.
Urine microscopy red blood cells 2 5/hpf, pus cells 5 9/hpf, epithelia cells 3 4/hpf, no cast or crystal. Culture yielded profuse growth of E. coli sensitive to genticin, ciproxin, cefuroximine, doxycycline.
PCV was 18%, white blood cell count was 6.4 x 10^9cells /l, neutrophil 76%, lymphocyte 21%, monocyte 3%. Blood film showed macrocytosis, hypochromia, rouleaux formation and target cells.
Serum sodium was 135mmo/l, potassium 4.7mmol/l, bicarbonate 12mmo/l, chloride 98mmo/l, urea 19.1mmo/l, creatinine 513.3umol/l, uric acid 403mmo/l.

Abdominopelvic ultrasound scan revealed a singleton inactive gestation with absent cardiac beat at 21 weeks gestation, the placenta was mid anterior and grade 2 maturity. The kidneys were small sized with poor corticomedullary differentiation. The other abdominal and pelvic organs were normal.

Tabs cefuroximine and intravenous frusemide were commenced. She received 2 units of packed RBC. She had a session of haemodialysis. The dead foetus was expelled a day later following induction by the obstetrician. She had another session of haemodialysis 2 days later. The antihypertensive, antibiotics and

haematinics including erythropoitien were continued.

She was discharged on the 11th day of admission with a stable clinical state, BP 140/80mmHg, serum urea 13mmol/l, creatinine 210umol/l, PCV 25%, Urinalysis showed protein 2+, microscopy was normal and no growth on culture.

She was to be followed up at the outpatient clinic fortnightly but she defaulted and not been to clinic since discharge.

DISCUSSION

Pregnancy in women with chronic kidney disease is a difficult goal to achieve and the concerns are multidimensional: effect of pregnancy on renal function and the effect of the kidney disease on the pregnancy. The challenges are usually protean and outcome unpredictable.

These challenges encountered ranges from ignorance to deteriorating kidney function in these patients. The patient in this report defaulted in both prenatal and antenatal medical follow up because she did not understand the enormity of her illness. This is consistent with other reports on the prevailing ignorance in Nigerian population concerning diseases especially kidney and kidney related diseases[7, 8]. This has caused lots of limitations to programs relating to prevention and treatment of these diseases.

Worsening hypertension and difficulty in controlling the hypertension is a common finding in pregnant patients with chronic kidney disease[9, 10]. This has been attributed to the inability of the diseased kidney to adapt to various haemodynamic changes associated with pregnancy. Hypertension was reported to have worsened in 35.5% of women with chronic hypertension during pregnancy, of which 13.0% had the pregnancy terminated preterm because of poor control of the hypertension[9, 11]. This is consistent with this case as the patient presented on account of poor control and worsening of the hypertension. Non adherence to prescribed medications, not regular to follow up and contraindication of many antihypertensive in pregnancy are factors that could also contribute to difficulties encountered in managing hypertension in pregnancy.

The patient reported developed worsening anemia which responded poorly to haematinic and erythropoietin. The anaemia resulted from chronic kidney disease, pregnancy, worsening renal function and urinary tract infection. Other challenges encountered in this patient include worsening proteinuria, urinary tract infection and ecclampsia. Also financial state of the patient is another critical determinant in management of various clinical conditions including CKD and pregnancy. This will influence the patient's ability to adhere to prescribed management régime. Our patient declined admission on presentation because of financial challenges.

Progression of renal insufficiency in pregnancy depends on the degree of renal dysfunction at the time of conception as well as the presence and the extent of comorbidities. Accelerated deterioration of kidney function occurs in some pregnant patients with chronic renal insufficiency[9, 12]. Worsening hypertension, anaemia, urinary tract infection and proteinuria are the major contributory factors to increasing decline in renal function of pregnant patients with CKD[13]. Cunningham et al[14] in their own study reported that patients with moderate to severe renal impairment are more likely to have accelerated deterioration in renal function in pregnancy. They further reported that 20% of pregnant patients with moderate renal insufficiency and 45% of patient with severe renal insufficiency progressed to ESRD within a year after delivery. The renal function of our patient worsened, she had two sessions of haemodialysis. This could have resulted from worsening hypertension, anaemia, proteinuria and the urinary tract infection she developed. The aetiology of the renal impairment is irrelevant in determining the effect of pregnancy in kidney function except in lupus nephritis where exacerbation can occur during pregnancy and this increases the risk of worsening renal function[1].

Chronic kidney disease in pregnancy has been associated with poor fetal outcome. This includes midpregnancy losses, preterm delivery, fetal growth retardation, high rate of caesarian section, congenital abnormality and stillbirth[5,12,16,17]. Hou et al[17] reported 44% spontaneous abortion, 8% elective abortion, 3% stillbirth, 5% neonatal death, and 60% preterm deliveries. However infant survival was 92%. In our patient there was evidence of growth retardation as the clinical and sonographic assessment of the gestational age was consistently smaller than the estimated gestational age. The pregnancy could not be carried till term because of intrauterine death at 24 weeks gestation.

In conclusion pregnancy in patients with chronic kidney disease is fraught with medical, obstetric, economic and social challenges. Outcome is variable and depends on severity of kidney disease, comorbidities, cooperation of the patient and the managing team. To ensure a successful conception in CKD patients there is need for early identification and adequate education of all CKD patients desiring pregnancy, early referral and multidisciplinary approach, strict follow up and prompt intervention when necessary.

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