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Short-term haemodialysis in pregnant patients with acute renal failure: a report of two cases

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Summary
Haemodialysis in pregnancy is not common although, successful dialyses in pregnancy have been reported. It has also been found to improve survival of both mother and child especially, in patients with chronic renal failure, with pre-term labor being a common occurrence. Out of the 2,995 patients that were dialyzed at the University College Hospital, Ibadan in the last 10 years, only 2 of the patients were pregnant and both of them had acute renal failure. We present here the two cases, which represents our experience at the University College Hospital, Ibadan, Nigeria.

Keywords: *Haemodialysis; pregnancy; acute; renal; failure*

Rèsumè
L"halmodialyse lors des grossesses n"est pas frequent cependant, les dialyse conronnies de success ont ete reportees dans certain cas de grossesse. Il a ete montre que ceci ameliore la survie de la mere et de l"enfant, specialement chez les maladies ayant un defaut chronique des reins, la periode de travail avancce etant l"evenement commeun. Sur 2995 patients qui ont subi la dialyse an center hospitalier Universitaire d"Ibadan, an cours des 10 derniere annees, deux des patients seulement etaient enceinte et tous deux avaient un defaut des reins grave. Nons presentons ici les deux cas, qui represented notre experience an center Hospitalier Universitaire d"Ibadan an Nigeria.

Introduction

Severe renal failure may complicate pregnancy and often, there is hesitation to allow that pregnancy to progress. However, successful dialysis, especially haemodialysis in pregnancy, has been reported in the past with fetal survival [1]. In pregnant patients with acute or chronic renal failure, dialysis has been found to improve survival of both mother and child [2]. Although women constitute a smaller proportion of the dialysis population than men, yet the nephrologist must be aware of medical issues that are peculiar to women with renal failure to allow for proper management of these women. Most of the patients with chronic renal failure (CRF) managed at the University College Hospital; Ibadan (UCH) could not dialyze long enough for a chance of pregnancy to occur [3]. Pregnancy is uncommon in patients with CRF because of several sexual and gonadal dysfunctions; therefore, reports on dialysis in pregnancy are not many [4,5]. Our record at the Owena Dialysis Unit of the University College Hospital, Ibadan, showed that 2,995 patients have been dialyzed since its establishment 10 years ago. However, only two of them were pregnant and both of them had acute reversible renal failure. We are not aware of any report of this nature in Nigeria. We therefore, present the two cases, which represent our experience at the University College Hospital, Ibadan, Nigeria. We believe this presentation will also serve as useful information in the practice of nephrology in Nigeria.

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Case I

Mrs. G.M. a 22 year old primipara Canadian teacher and 22 weeks pregnant was admitted to the University College Hospital, Ibadan, with a 6-day history of high grade fever (T- 39.5°) associated with chill, anorexia, diarrhoea and vomiting of recently eaten meals. Two days before admission she had developed jaundice (after ingesting herbal remedy) and fever with significantly reduced urine output that was dark in colour. She also complained of headaches. There was no history of contact with any patient with jaundice since her arrival in Nigeria, and she had not received intramuscular injection or blood transfusion before the illness started. There was no previous history of surgery. She was not a known sickler, hypertensive or diabetic . Pregnancy had been uneventful up to this stage without bleeding per vagina, abdominal pain or vaginal discharge. She had no antenatal care in Canada or here in Nigeria. She was the only wife of a schoolteacher and she neither took tobacco or ingested alcohol. There was no known drug allergy.

Examination showed an acutely ill-looking young woman, conscious but drowsy, febrile (T-39.5°[1]), pale and jaundiced. There was no pedal edema. Her chest was clinically clear. Her pulse was 104/min regular and full volume, blood pressure was 120/80mmHg and the jugular venous pressure was not raised. There were only 1 and 2 heart sounds with no murmurs. Abdominal examination showed uterine enlargement compatible with 22 weeks gestation. There was no fetal distress. Liver, spleen, and kidneys were not palpable. Central nervous system showed no lateralising signs, but she had asterexis. She had produced only 100ml of urine in the last 24hrs before the fist dialysis.

The admission diagnosis was severe malaria with black water fever and acute renal failure. Urinalysis and urine microscopy showed trace proteinuria and cellular debris. Her haematocrit was 15%. The serum electrolytes, urea and creatinine values showed a urea level of 240mg/dl, creatinine, 3.0mg/dl, bicarbonate (HCO_3^-)21 mmol/L, potassium (K^+)3.1 mmol/L, sodium (Na^+)124 mmol/L and chloride (Cl^-) 93mmol/L.

She had asexual forms of P.*falciparum* parasite on blood films in the range of 200,000 parasites/ul of blood. HIV and HBsAg screening were negative. Abdominal/pelvic ultrasound revealed single fetus and normal-sized kidneys.

Intra-musclar artemeter 3.2mg/kg/day was given on day one while 1.6mg/kg/day was given for six days to treat her. She had 3 sessions of haemodialysis with 2 units of packed cell intra-dialysis. She had 3 hours of haemodialysis (on 25/6/98) during the first session to avoid disequilibrium syndrome. Ultrafiltration was limited to one kilogram for fear of causing inadequate placenta circulation since there was no significant fluid retention. Vital signs and fetal heart beats were monitored 1/2 hourly throughout the dialysis session. She had the second dialysis on 28/6/97 and the third on 2/7/97 both lasting 4 hours each. She improved significantly and her urine output gradually increased to an average of 600ml per day during the last two

dialysis sessions. The fetal heart sound and vital signs of patient were stable throughout. Her repeat blood film was negative for malaria parasite. Her serum urea fell from 240mg/dl to 70mg/dl and the creatinine fell from 3.0mg/dl to1.8mg/dl. (Table 1).

Table 1: Electrolytes, urea, creatinine and PCV of case 1

	25/6/98	27/6/98	28/6/98	2/7/98	5/7/98
Na^+ meq/ll	124	135	134	124	130
K^+ meq/l	3.1	2.7	2.5	2.5	3.1
Cl meq/l	93	100	101	93	100
HCO_3 meq/l	21	22	22	23	23
Urea mg/dl	240	225	207	117	70
Creatinine mg/dl	3	2.9	2.4	2.5	1.8
PCV%	15	22	24	28	28

Patient had 2units of packed cell on the 25/6/98 and 1 unit on 28/6/98

Patient however was discharged on request 5 days after dialysis and travelled back to Canada. She could not be followed up.

Case 2

Mrs. F.I. was a 24 year old Nigerian fashion designer, Gravida 1 para 0^{+0} and 32 weeks pregnant. She had been referred from a private hospital in Abeokuta with a one week history of high grade fever, chills with associated headaches, malaise, anorexia and vomiting. She had been treated for malaria and had been given 1 unit of blood at the referral center. At U.C.H., patient was noticed in addition to presenting symptoms at referral center, to have jaundice, facial/pedal swelling and significantly reduced urinary output. There was no history of diarrhoea, sore throat or skin rash. She also had no previous hospital admission or surgery. Examination showed an acutely ill-looking young woman who was conscious and alert but had asterexis. She was febrile (T-38.5°c) had facial fullness and mild bilateral pitting ankle edema. Her pulse was 98/min, regular and had full volume. Her blood pressure was 130/70mmHg in supine position, the jugular venous pressure was not raised, apex beat was not displaced and heart sounds 1 and 2 were heard. There were no murmurs. Her chest was clear clinically. Abdominal examination showed a gravid uterus compatible with 32 weeks gestation. The fetal heart rate was normal. Liver, spleen and kidneys were not palpable. She was catheterized and about 150ml of dark urine was obtained. Assessment of sepsis syndrome and acute renal failure to exclude malaria fever were made. Her PCV was 14% and electrolyte, urea and creatinine values were as shown in Table 2.

Table 2: Electrolytes, urea, creatinine and PCV of case 2

	29/7/98	30/7/98	3/8/98	11/8/98	17/8/98
Na^+ meq/ll	131	134	134	140	135
K^+ meq/l	4.5	3.6	4.0	3.9	4.2
Cl meq/l	100	101	102	108	103
HCO_3 meq/l	23	23	19	20	22
Urea mg/dl	245	153	93	66	51
Creatinine mg/dl	5	3.9	3.9	1.8	1.5
PCV%	14	28	30	33	34

Patient had 2 units of packed cell on 29/7/98

Abdominal and pelvic ultrasound revealed twin pregnancy and normal sized kidneys. Urinalysis and urine microscopy showed trace proteinuria, cellular debris and crystals. She was HIV and HBVsAg negative. Her blood film for malaria parasite was negative.

She was placed on reduced dose of I.V. Augmentin (Clavulinic acid +Amoxil) 600mg 12 hourly and changed to oral 375mg b.d after the second dialysis.

She had 3 sessions of haemaodialysis. She was transfused with 2 units of packed cell during dialysis. Urine output increased to an average of 550ml per day by the last dialysis. The patient remained on admission after the 3rd dialysis and was subsequently delivered of premature twins at 34 weeks (a male of 1.5kg and female of 1.2kg). The female baby died 2 weeks after delivery. The male did better and was discharged home from the special care baby unit after 4 weeks of delivery weighing 2.5kg.

Discussion

Our present experience on dialysis in pregnancy is purely anecdotal. However, these two cases have shown that short-term haemodialysis in pregnant patients with ARF can be successfully done with good obstetric outcome. Most patients with acute renal failure often improve after three sessions of haemodialysis, although, pre-term labour may be a problem to contend with as this was suggested in one of the cases. Some studies have not shown any significant increase in pre-term uterine contractions in spite of the increased frequency of pre-term labour in this group of patients [6,7]. The mean gestational age and birth weight in one of the studies was 32±5 weeks and 1604±652 respectively[7]. Of the two cases there was no mortality or any obvious long-term disability due to dialysis. This was most likely due to close monitoring by both staff of the dialysis unit and obstetricians. Even with long-term dialysis in pregnancy, fetal malformation is rare [7]. Herbal remedy used by the first case may have contributed to her developing renal failure. Febrile illnesses and sepsis syndrome are known causes of acute renal failure [8]. This perhaps explains the presentation in the second case. Indeed, pregnancy has been noted to be successful in the face of long-term haemodialysis, but in some studies up to 50% may go into pre-term labour, 12% may result in stillbirth while 9% peri-natal death may occur. Pre-term labour and low birth weight were found to correlate with the frequency of dialysis [7]. The blood transfusion given to the patients during dialysis also helped to improve fetal oxygenation through enriched uteroplacental circulation. This has been reported to be associated with more favorable maternal and fetal outcome during chronic dialysis in pregnancy [9]. In spite of this, serious consideration should be given to contraindications to haemodialysis in pregnant patients before the decision to dialyze is taken. More over, pre-term labour following this procedure remains a major cause of morbidity and disability and may contribute to long-term neurological disability in the babies. In conclusions, short-term hemodialysis is compatible with pregnancy but a proper assessment of the effects of haemodialysis in pregnancy will require a larger number of patients.

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