Obstetric Cortical Renal Necrosis, Even Reality in the Tropics

Cisse MM1*, Ka EF1, Seck SM2, Dial CM3, Diouf AA4, Lemrabott AT5, Faye G1, Mbaye M4, Mgueye Faye M1, Niang A1 and Diouf B1

1Nephrology department of teaching hospital Aristide Le Dantec Dakar, Senegal
2Nephrology department of teaching hospital Gaston Berger Saint Louis, Senegal
3Pathology department of teaching hospital Grand Yoff Dakar, Senegal
4Obstetric and Gynecology department of teaching hospital Aristide Le Dantec Dakar, Senegal

Abstract

Obstetric cortical renal necrosis is a serious complication that can lead to chronic renal failure and the need for dialysis for life in some cases. In Africa, despite progress, much remains to provide in order to prevent this complication. Difficulties in health care access and lack of monitoring of pregnancies are contributing factors. We propose through 5 cases report the characteristics of obstetric renal cortical necrosis in the tropics.

Keywords: Cortical renal necrosis; Pregnancy; Senegal

Introduction

Cortical renal necrosis CRN is defined by a bilateral ischemic necrosis of the renal cortex without medullar lesion. It is a rare cause of acute kidney injury and it is mostly related to obstetrical causes [1]. Despite recent therapeutic progress, CRN is still associated with a high mortality of 19% and persistence residual renal impairment in 68% of cases [1]. There are very few data on prevalence and prognosis of CRN in Senegal. In this study, we report epidemiological, clinical and Para clinical patterns of five obstetrical cortical renal necrosis in Aristide Le Dantec Hospital of Dakar.

Patients and Method

We performed a retrospective analysis of 5 cases followed in Aristide Le Dantec Hospital between November 2009 and October 2012. Cortical renal necrosis was confirmed by renal biopsy that was performed after 21 days of therapy without recovery of renal function. Only histological samples with at least 8 glomerula were included in the study.

Results

The average age of our five patients was 33 years range from 25 to 40 years. All patients were received late in nephrology department with an average referral delay of 14 days. Clinical and Para clinical characteristics of each patient at admission are presented in Table 1. All patients had high blood pressure. Three patients had anuria cases 2, 4 and 5, one oliguria case 3 and one normal diuresis case 1. The mean serum creatin and hemoglobin levels were 14.8 mg/dl and 6.4 g/ dl respectively. All patients received hemodialysis treatment. Table 2 summarizes the therapeutic management of patients and their clinical evolution.

Discussion

Cortical renal necrosis is a rare cause of acute kidney injury in developed countries where incidence has dramatically decreased (Figure 1). It represents 1 to 2% of all causes of parenchymal acute kidney injury AKI [2]. Conversely, this incidence is still high around 6-7% in poor countries where quality of care is low [2]. Early studies from India found that renal cortical necrosis was responsible of 7.1% dialysis for AKI [3]. However, more recent data showed lower prevalence of 3.8% and 4.6% in 1994 and 2003 respectively [3,4]. In a recent analysis of 1822 cases of AKI during 22 years in Eastern India, Prakash et al. report a prevalence of 3.12 % for cortical necrosis [3]. In a group of 46 women who underwent renal biopsy for AKI in Madrid, Liano and Pascual found only one cortical necrosis case 0.13% [3].

Obstetrical complications represent the most frequent etiologies of cortical necrosis with about 50 to 70% of cases [4,5]. Recently, a retrospective cohort of 224 cases of postpartum AKI in Senegal, Lemrabott found 3.12% of cortical CRN [6]. But this low prevalence could be explained by the absence of renal pathology in the first 8 years of the study. In Morocco, 96 % of patients admitted for AKI were not monitored during pregnancy [7,8]. The lack of monitoring is part of prenatal circumstances often found in patients with obstetric acute renal failure [9]. Three of our patients had completed their prenatal visit.

The risk of CRN seems to be higher in late pregnancy and in the immediate postpartum period due to important changes in hemostasis in the third quarter and at the time of delivery. In India, septic abortion in the first trimester represents 78% of cases [3]. In this work, cortical necrosis had occurred in the third trimester in all patients but only one of them was secondary to abortion case 4. Bleeding was constant in our series and the delivery date was done 3 times by vaginally case 2, 4 and 5. In a series of 48 patients, 32 66% had a postpartum hemorrhage and 29 60.4% had undergone a cesarean section [10]. The average time reference was 14.6 days. Our time was longer than that found in India, which was 4.7 days [4].

The main symptom of RCN is anuria. Three of our five patients were anuric after childbirth cases 2, 4 and 5. The other 2 were oliguric cases 1.3. Prakash had 78.9% of cases and 21.1% of anuria oliguria [3]. The duration of anuria may be correlated with the percentage of glomeruli affected. All patients were hypertensive at admission. Blood pressure tends to rise even in hypovolemic shock after partial restoration of flow [11]. Laboratory tests confirmed the renal failure in our patients with a mean serum creatinine of 148.5 mg/l, with a range of 70.5 to 370 mg/l and a mean blood urea of 2.096 g/l, with a range of 3.07 to 1.47 g/l. If the cortical necrosis is associated with hemolytic uremic syndrome, a hyperreticulocytosis with schistocytes and anisocytosis is found with

*Corresponding author: Cisse MM, Nephrology department of teaching hospital Aristide Le Dantec Dakar, Senegal, Tel: 00 221 77 573 88 09; E-mail: mhmcisse@yahoo.fr

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Sized kidneys or increased with a variable differentiation. In our series, ultrasound without injection is systematic in any AKI. It shows normal-a great contribution to confirm the diagnosis [12,13]. Simple renal computed tomography CT and magnetic resonance imaging MRI is of the latter is difficult or even impossible, imaging, particularly study of renal tissue obtained by renal biopsy, but when the realization necrosis and giving an assessment of the extent of damage. The cases 1 and 3.

In addition, there is often a microscopic hematuria rarely macroscopic times the normal associated with thrombocytopenia in the second case. High LDH. In two of our patients, we found a high LDH to 2 times and 8 times the normal associated with thrombocytopenia in the second case. In addition, there is often a microscopic hematuria rarely macroscopic non-selective proteinuria, and leukocyturia and cylindruria [8]. In our study, proteinuria was measured in 3 patients and was elevated in 2 non-selective proteinuria, and leukocyturia and cylindruria [8].

Renal imaging may be useful in providing arguments for cortical necrosis and giving an assessment of the extent of damage. The definitive diagnosis of cortical necrosis certainly falls of histological study of renal tissue obtained by renal biopsy, but when the realization of the latter is difficult or even impossible, imaging, particularly computed tomography CT and magnetic resonance imaging MRI is a great contribution to confirm the diagnosis [12,13]. Simple renal ultrasound without injection is systematic in any AKI. It shows normalized kidneys or increased with a variable differentiation. In our series, kidney size was normal for all our patients but the differentiation was poor in 3 cases case 1, 4 and 5 and normal in the other 2 cases case 2 and 3 (Figure 2).

There is no doubt that renal biopsy is the "gold standard" in the diagnosis of cortical necrosis. In a review of the literature, 95 to 100 % of diagnosis of cortical necrosis in France and India based on histological examination [14]. However, this rate has declined since 1980 from 86% showing the decline of the dependence of the renal biopsy, since the development of other non-invasive diagnostic methods. These methods have been developed to confirm the cortical necrosis, when the renal biopsy was at risk or contraindicated, because of the instability of the patients or the presence of coagulopathy. Histopathological lesions are varied. However, cortical necrosis affects all components kidney. In the complete form, there is a total destruction of the renal parenchyma leaving intact only small subcapsular and deep areas of the renal parenchyma.
Two of our patients had preeclampsia [22,23]. In a study in Morocco [9], whereas it was present in 12.5% of cases Chugh et al. [4,19]. In our series, postpartum hemorrhage by placental abruption developed countries is still common in India, between 61.53 % and 78% [16,17,19]. It may be secondary to placental abruption, septic abortion, eclampsia, postpartum hemorrhage, amniotic fluid embolism and puerperal sepsis [20]. Septic abortion continues to be a major cause of cortical necrosis, possibly due to endotoxin-mediated endothelial damage leading to vascular thrombosis and subsequent renal ischemia. However, cortical necrosis secondary to septic abortion rare in developed countries, still common in developing countries, must remain obstetric CRN, a problem in developing countries. Nephrology 22: 3-4.

Figure 1: Complete cortical renal necrosis (black arrow).

Figure 2: Normal size kidney.

The treatment aims to alleviate hemodilution, metabolic disorders, high blood pressure, anemia and infections associated. The iterative hemodialysis should be initiated early in the prevention of metabolic disorders [17]. Several treatments have been tried under etiopathogenic and sometimes associated. This is heparin, fibrinolytic, antiplatelet agents and fresh plasma. These treatments have allowed a partial recovery of renal function in some patients [17,21]. However, any curative effect of these treatments on histological lesions was not been proven. These sessions were started in one time less than or equal to 3 days for 3 patients, unlike the other two who started hemodialysis 18 and 32 days after birth. This delay was due to the time reference of the patients in Nephrology department relatively long, respectively 12 and 31 days. In the early 19s, reported mortality of cortical necrosis was 84% [1]. In our series one patient partially recovered her renal function but the others progressed rapidly to end-stage renal disease. Among those who entered hemodialysis, two died and one had to stop the treatment because of inaccessibility of medical care.

**Conclusion**

Obstetric CRN, still common in developing countries, must remain a rare complication of pregnancy. The best treatment is prevention. The disappearances of clandestine abortions, improving prenatal care and the best care for obstetric complications have resulted in a dramatic decrease in obstetric IRA in developed countries. Antenatal care would detect patients at risk for better prevention.

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