Teaching Point
(Section Editor: K. Kühn)

Supported by an educational grant from genzyme

It looks like, it smells like but is it just pre-eclampsia?

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Keywords: pre-eclampsia; rapidly progressive glomerulonephritis

Introduction

In a primigravida, the onset of hypertension, proteinuria and oedema during the third trimester is almost synonymous with pre-eclampsia [1]. Of the accompanying laboratory data, an elevated plasma creatinine (>1.2 mg/dl) and urate level (>5.5–6.0 mg/dl) lend strong support to the diagnosis. However, pre-eclampsia can mimic a variety of conditions which can essentially present with signs and symptoms similar to pre-eclampsia. The issue may be confounded further by the fact that pre-eclampsia can develop, i.e. be superimposed on the underlying disease process. We hereby report a case which, to all intents and purposes, was initially justifiably considered to represent merely severe pre-eclampsia. In view, however, of the patient’s atypical course following delivery, evaluation culminating in the performance of a renal biopsy disclosed an unsuspected rapidly progressive pauci-immune glomerulonephritis.

Case

A 32-year-old Caucasian primigravid female was admitted in the 31st week of pregnancy because of a 2 week history of raised blood pressure and proteinuria. The pregnancy up to the preceding fortnight had been uneventful (blood pressure 110/70 mmHg with no proteinuria). Three years previously, the patient had undergone renal sonography for the investigation of microscopic haematuria and proteinuria discovered during a fertility work-up. At the time, the kidneys were of normal appearance and renal function was reported as normal. No other tests were carried out.

On examination, she was markedly oedematous, hyper-reflexic with a blood pressure of 180/110 mmHg. Initial laboratory data showed a serum haemoglobin of 9.5 g/dl, platelets 168 000/μl, creatinine 1.8 mg/dl, uric acid 9.9 mg/dl, SGOT 38 IU/l, SGPT 32 IU/l, albumin 2.3 g/dl and proteinuria of 3.8 g/day. Fibrinogen and D-dimer levels were elevated [564 mg/dl and 824 ng/ml (0–250), respectively], and prothrombin time, PT-INR and APTT were within normal limits. The patient was administered intravenous saline, labetalol and magnesium. The following day she underwent a caesarean section at which a male infant of birth weight 1250 g and an Apgar score of 10 was delivered. After delivery, although blood pressure was well controlled, renal function continued to deteriorate, reaching a peak serum creatinine of 2.8 mg/dl with the persistence of a severe nephrotic syndrome. Anti-nuclear, antiphospholipid, anti-glomerular basement membrane (GBM) and antineutrophil cytoplasmic antibodies were negative, and complement levels normal. Two weeks post-operatively, a percutaneous renal biopsy was performed. On light microscopy, there were 14 glomeruli of which four were completely hyalinized. All the remaining glomeruli showed mesangial and endothelial proliferation and cellular crescents (Figure 1). Fibrinoid necrosis was seen in two of the glomeruli as well as in two small interstitial arteries. Immunohistochemical staining was negative for C3, IgM, IgG and IgA. Electron microscopy demonstrated mesangial interposition of the GBM and small intramembranous electron-dense deposits.

The patient was treated with pulse steroids followed by oral prednisone 1 mg/kg and cyclophosphamide 2 mg/kg. Currently, after 6 months of therapy, serum creatinine has stabilized at 1.7 mg/dl with a urine protein excretion of 2.2 g/day.

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Discussion

The presentation of proteinuric hypertension in the third trimester may, at times, pose a diagnostic dilemma. In the majority of cases, particularly in a primigravida, pre-eclampsia is the correct choice, although, in the absence of a past history of hypertension, distinguishing it from chronic hypertension may be difficult. In a minority, this clinical picture represents either an exacerbation or the onset of an underlying renal disease, alone or with superimposed pre-eclampsia. Our patient is a case in point. Up to 2 weeks before admission, her pregnancy had been uneventful. Specifically, prenatal follow-up had documented normal blood pressure values with no proteinuria and no impairment of renal function. There had been an episode of proteinuria and microscopic haematuria in the patient’s past but, apart from a normal kidney sonographic appearance, no further details regarding this episode are available. Whether this is indicative of underlying renal disease is impossible to ascertain.

On her current admission, our patient exhibited typical signs of severe pre-eclampsia. She was hyperreflexic, had grossly elevated blood pressure, nephrotic range proteinuria and raised plasma creatinine and urate levels. Accordingly, she was treated as such and delivered by caesarean section. Her post-delivery course was characterized by continued deterioration of renal function. Although pre-eclamptic proteinuria may take several weeks post-partum to subside, it is distinctly unusual to see a decrease in renal function after delivery in pure pre-eclampsia. Renal biopsy is seldom indicated in pregnancy or in the immediate post-partum period. In particular, it should not be resorted to with the aim of resolving the differential diagnosis of pre-eclampsia. However, as our patient’s renal function was deteriorating, a renal biopsy was performed 2 weeks into the puerperium. Histology revealed a pauci-immune crescentic glomerulonephritis (rapidly progressive glomerulonephritis) with no evidence of endotheliosis. Of interest, Fisher et al. in a clinico-pathological correlation reported that where pre-eclampsia had been diagnosed on clinical grounds, such a diagnosis was incorrect in 25% of primigravidae and in >50% of multiparae [2].

This case highlights the fact that whereas proteinuric hypertension for the first time during pregnancy most commonly denotes pre-eclampsia, the condition may mask severe underlying renal pathology. All these women should, therefore, be closely monitored in the immediate post-partum period and, when indicated by clinical and/or laboratory parameters, renal biopsy be promptly performed.

Teaching points

1. In pregnancy, clinical and laboratory findings compatible with pre-eclampsia do not necessarily preclude the existence of other renal disease.
2. Such renal disease may be severe in nature as exemplified by our case of rapidly progressive glomerulonephritis.
3. Should there be any doubt about the diagnosis of pre-eclampsia, particularly in the presence of declining renal function in the post-partum period, renal biopsy is urgently required.

Conflict of interest statement. None declared.

References