Case Report

A Case of Renovascular Hypertension Due to Bilateral Renal Artery Microaneurysm Who Succeeded in Baby Delivery

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We report the case of a young pregnant woman with bilateral renovascular hypertension due to renal microaneurysms from an unknown cause, who had a successful delivery. Pregnancy did not affect the disease activity even in the postpartum period. Her blood pressure was maintained within the normal range by administration of labetalol. Although the angiographic appearance of the symmetrical aneurysms in both renal artery beds from the interlobular to arcuate artery levels suggested polyarteritis nodosa of multiple microaneurysms in the bilateral interlobular arteries, the clinical features suggested other causes of renovascular hypertension, such as fibromuscular dysplasia and/or congenital microaneurysms. We were thus unable to reach a definitive diagnosis. (Hypertens Res 2001; 24: 83-85)

Key Words: renovascular hypertension, renal artery microaneurysm, delivery, pregnancy

Introduction

In cases in which other diagnostic methods fail to definitively diagnose polyarteritis nodosa, angiographic imaging of the small aneurysms within the parenchyma of the kidney has been considered very useful (I-4). In the present case, angiography — which was performed for further examination of high reninogenic severe hypertension — revealed symmetrical microaneurysms in the bilateral renal artery beds. Although this finding is characteristic of polyarteritis nodosa, we were finally unable to diagnose the patient with this disease. We here report this relatively rare case, and discuss the reasons for the inability to establish a diagnosis.

Case Report

A 19-year-old female visited attending physician with the complaints of headache, right hemi-numbness and abdominal pain on December 1991. Cerebral computed tomography and angiography showed no abnormalities. To further examine her high blood pressure (200/130 mmHg) with high plasma renin activity of 13.4 ng/ml/h, she was referred to the correlated hospital. Intrararterial digital subtraction renal angiography, performed on August 1992, showed bilateral multiple microaneurysms in the peripheral branches of the renal arterial tree between the interlobular and arcuate arteries (Fig. 1). There were no aneurysms in other areas, such as the mesenteric or hepatic arteries. Renal vein sampling revealed high plasma renin activity in both sides (right side, 11.9 ng/ml/h; left

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Fig. 1. Angiograms of renal arteries. The intraarterial digital subtraction renal angiography was performed in 1992. An additional selective renal angiography in 1997 showed no progression. Only the second angiograms are shown.

side, 11.1 ng/ml/h). Physical examination revealed no specific findings or abdominal bruit. Findings of the ocular fundus were normal. Laboratory data showed the absence of anemia, white blood cell counts of 3,600/μl without eosinophilia, and a platelet counts of 24.7×10^4/μl. C reactive protein level was 0.5 mg/dl, and the erythrocyte sedimentation rate was 10 mm/h. Antinuclear factor was negative, while anti-DNA-antibody was weakly positive (×40). Serum creatinine concentration was 0.9 mg/dl, and proteinuria was negative. The angiographic findings were similar to those for polyarteritis nodosa, but the clinical features were not definitive.

The patient was then admitted to our hospital on October 1992 to evaluate the etiology of bilateral renal microaneurysm. She had no history of lasting fever, weight loss, or arthralgias. Her serological tests were negative including perinuclear and cytoplasmic pattern anti-neutrophil cytoplasmic antigens as well as complement system without the anti-DNA-antibody. Hepatitis B surface antigen and antibody were both negative. In the end, we diagnosed her with bilateral renovascular hypertension due to an unknown cause, possibly to fibromuscular dysplasia. Blood pressure was controlled to approximately 130/90 mmHg with cilazapril, an angiotensin converting enzyme inhibitor. On January 1993, she was readmitted to the second hospital due to abdominal pain and left hemi-numbness, both of which disappeared after an approximately 1-month stay in the hospital. In 1995, cilazapril ceased to provide good control of her blood pressure, and was replaced with nilvadipine, a Ca antagonist. Blood pressure control gradually began to deteriorate with nilvadipine as well, and a third drug, the β-blocker bisoprolol, was substituted.

A follow-up renal angiography, performed in the fourth hospital in 1997, showed no significant change in the bilateral multiple renal microaneurysm. The patient was readmitted to our hospital in March 1998 for blood pressure control during pregnancy. Her serum creatinine concentration and creatinine clearance were 0.7 mg/dl and 123 ml/min. Proteinuria was negative. Labetalol, an α, β-blocker, was administered at the dose of 50 mg twice a day, and was increased to 50 mg three times a day. Her blood pressure was well controlled to below 130/80 mmHg using only labetalol, and she delivered a healthy baby on September 30, 1998. After delivery, her blood pressure was completely well controlled with labetalol. Both mother and baby have been healthy. There were no signs for inflammation or autoimmune disorders even during pregnancy or over the subsequent 8-year follow-up. Both mother and baby remain healthy as of this writing.

Discussion

We here reported the case of a young female with bilateral renal microaneurysms from an unknown cause, who succeeded in the delivering a healthy baby. The angio-
graphic findings resembled those of polyarteritis nodosa (2, 3), since microaneurysms were recognized symmetrically in both renal artery beds from the lobular arcuate to interlobular artery levels. Interestingly, the patient showed no signs of inflammation or autoimmune disorder either during or after her pregnancy. She had neither proteinuria nor renal function deterioration throughout the course. Further, an additional angiography 5 years later showed no progression of the microaneurysms size, number, or other symptoms, despite with only antihypertensive therapy. These features precluded a definitive diagnosis of polyarteritis nodosa.

It is known that pregnancy affects the various courses of disease. In the case of rheumatoid arthritis, the disease symptoms are ameliorated during pregnancy (5, 6), but exacerbated in the postpartum period (5). In systemic lupus erythematosus, on the other hand, exacerbation of the activity occurs during pregnancy (7, 8). In the present case, the absence of signs of inflammation or autoimmune disorders during and after pregnancy may also suggest the possibility that polyarteritis nodosa was low. It should be noted that polyarteritis nodosa is a disorder which usually occurs in middle-aged men (4). The stable course of disease also suggests the other disease rather than polyarteritis nodosa. Finally, The American College of Rheumatology 1990 criteria (9) for the classification of polyarteritis nodosa could not be applied to this case, since only hypertension and arteriographic abnormalities were present, excluding the possibility of mononeuropathy or polyneuropathy. We therefore could not diagnose this patient with polyarteritis nodosa, though the very low disease activity remaining after remission did not disappeared completely. Fibromuscular dysplasia is one of the most common causes of renovascular hypertension, especially in young women. Aneurysms are common in the medial type of fibromuscular dysplasia, but are usually located between the main renal artery and lobar artery (10). Thus, the present case does not correspond to a typical case of fibromuscular dysplasia. The possibility of a congenital microaneurysm of the renal artery must also be considered.

Because angiotensin-converting enzyme inhibitors are contraindicated for pregnant women, we administered labetalol, an antihypertensive drugs that have proven to be safe in pregnant women during pregnancy (11). Using labetalol alone, we were able to control her blood pressure relatively well, probably by suppressing the secretion of renin.

In conclusion, we here reported the case of a young woman with renovascular hypertension due to bilateral renal microaneurysms from an unknown cause, who nonetheless had a successful pregnancy and delivery. Although the angiographic appearance of the symmetrical bilateral aneurysms suggested polyarteritis nodosa, the general features of the case suggested diseases other than polyarteritis nodosa, such as fibromuscular dysplasia or congenital microaneurysms. Alternatively, a new disease entity distinct from these three may be required to explain our case fully.

References