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Short Communication

Maternal and fetal outcomes in pregnant women with Takayasu aortoarteritis: Does optimally timed intervention in women with renal artery involvement improve pregnancy outcome?

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ABSTRACT

Objective: Takayasu aortoarteritis (TA) is common in the Southeast Asian and Indian subcontinent regions with a female-to-male ratio of 8:1. Age at diagnosis is < 30 years in 90% of the cases. Because the disease is common in women of child-bearing age, management of pregnancy in these patients becomes an important issue. The purpose of this study is to evaluate the maternal and fetal outcomes in pregnancies with TA and also to evaluate whether early intervention for renal artery involvement is associated with improved outcomes.

Materials and methods: We collected data of 12 patients with 18 pregnancies prospectively from 2006 to 2012. The patients were divided into three groups and their outcomes were noted: (1) without renal artery involvement; (2) with renal artery involvement without intervention; and (3) with renal artery involvement for which intervention has been done.

Results: Body mass index of patients was between 18.5 kg/m^2 and 23.2 kg/m^2. Renal artery involvement and hypertension were seen in four patients. One patient had percutaneous transluminal balloon angioplasty and another had renal artery stenting. In patients without renal artery involvement, gestational hypertension was seen in 50%, pre-eclampsia in 10%, abortion in 10%, and intrauterine growth restriction (IUGR) in 40% of pregnancies. In patients with renal artery involvement without intervention, gestational hypertension was seen in 90%, pre-eclampsia in 20%, abortion in 60%, preterm in 20%, IUGR in 20%, fetal demise in 20%, and neonatal death in 20% of pregnancies. In patients with renal artery involvement for which intervention has been carried out, gestational hypertension was seen in 66%, and abortion and IUGR were seen in 33% of pregnancies.

Conclusion: Patients with renovascular involvement without intervention are at high risk of having maternal and fetal complications. Early intervention prior to conception in these women is recommended to prevent pregnancy complications.

Introduction

Takayasu aortoarteritis (TA) is panarteritis of the aorta, great vessels, and renal and pulmonary arteries. The arterial lesions can lead to secondary hypertension, retinopathy, cardiac involvement, cerebrovascular events, and premature death [1]. The prevalence of TA is reported to be in the range of 2.6–6/million in the general population, and is common in the Southeast Asian and Indian subcontinent regions with a female-to-male ratio of 8:1. Age at diagnosis is < 30 years in 90% of the cases [2]. Because the disease is common in women of child-bearing age, management of pregnancy in these patients becomes an important issue. The disease is characterized by an early inflammatory phase, which is associated with nonspecific signs and symptoms such as fever, arthralgias, and weight loss, and a late occlusive or pulseless stage. Compared with the Western population with TA, where aortic arch involvement is common, the Asians have more common involvement of the abdominal aorta and renal arteries. There is paucity of data on pregnant women with Takayasu disease in Western literature. Only

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eight case series with 210 pregnancies have been reported to date [3–10]. The course of disease seems to be neither affected nor worsened by pregnancy unlike other autoimmune disorders. Many authors have reported adverse maternal and fetal outcomes during pregnancy but the outcome appears to be good with uncomplicated Takayasu arteritis. The outcome mainly depends on the maternal vascular involvement, severity of hypertension during pregnancy, presence of superimposed pre-eclampsia, and early institution of proper management. The optimal management for pregnant patients with TA is not yet defined due to the rarity of this condition. We herein present a series of pregnant patients with Takayasu arteritis who presented to us during the period between 2006 and 2012. We tried to correlate the disease severity and renal artery involvement with maternal and fetal complications.

Materials and methods

Study design and selection of patients

This was a prospective observational study. Being attached to a large cardiology referral center, TA is not an uncommon disease at our center. We started collecting data of this otherwise rare disease and performed analysis of prospectively collected data from 2007 to 2012 at a tertiary care hospital in Northern India. The patients were diagnosed on the basis of American College of Rheumatology Criteria, 1990, and supported by arterial Doppler findings. The criteria are as follows: age of disease onset <40 years, claudication of extremities, decreased brachial artery pulse, blood pressure difference of >10 mmHg, bruit over the subclavian arteries or aorta, and angiogram abnormality. Diagnosis of Takayasu arteritis requires that at least three of the six aforementioned criteria are met. We herein report the course and outcome of 18 pregnancies in 12 patients with Takayasu arteritis. Most patients (83%) were diagnosed with Takayasu arteritis prior to pregnancy. None of the patients was receiving any medical treatment for the disease remission. All the patients had spontaneous conception without any assisted reproductive technique. None of the patients underwent proper preconceptional counseling. The mode of presentation in these patients is shown in Figure 1.

The patients were classified according to Ishikawa's criteria into three groups (Groups I–III). Group I included patients without complications. Group II had one of the following complications: retinopathy, secondary hypertension, aortic regurgitation, and arterial aneurysm; this group was subclassified into Class IIA and Class IIB according to the severity of each complication. Group III had two or more of the aforementioned complications. Two thirds of the patients in our series belonged to Ishikawa Group I, one fourth of patients belonged to Group II, and one twelfth belonged to Group III. The fetal and maternal complications in the three Ishikawa groups are mentioned in Table 1.

Doppler imaging of major vessels including renal vessels was performed in all the patients. Vascular involvement is shown in Figure 2. Renal artery involvement was seen in four patients. We observed that patients with renal artery involvement without any intervention had worst pregnancy outcomes. The pregnancy outcome in patients with and without renal artery involvement is discussed in the next section and summarized in Table 2.

Results

Patients without renal artery involvement

Eight patients with 10 pregnancies are reported in this group. The mean age of diagnosis of patients was 20 years. Body mass index of patients was in range of 18.5–23.2 kg/m^2. None of the patients had hypertension prior to pregnancy. The gestational age at presentation to us varied between 6 weeks and 24 weeks. Unilateral or bilateral radial pulse was not palpable in any of our patients except one. Erythrocyte sedimentation rate (ESR) was elevated in 40% of the patients. Lupus anticoagulant was negative in all the patients. Blood and urine investigations were normal. Electrocardiogram and echocardiography were normal in all the patients except for the patient with dilated cardiomyopathy. Her echocardiography revealed Type III diastolic dysfunction along with severe systolic dysfunction. There was evidence of mild aortic and mitral regurgitation and the left ventricular ejection fraction was 35%. She was started on oral furosemide (40 mg o.d.) and carvedilol (3.125 mg b.d.). Her Doppler imaging showed abdominal aorta involvement. The ejection fraction decreased from 35% at 12 weeks of gestation to 20% at 36 weeks of gestation. She was started on oral digoxin (0.25 mg o.d.) along with furosemide and carvedilol. She went into spontaneous labor at 39 weeks of gestation and had a ventouse-assisted delivery under epidural analgesia (birth weight 2590 g).

One patient had first-trimester missed abortion and was induced by vaginal misoprostol. Five of ten (50%) pregnancies had

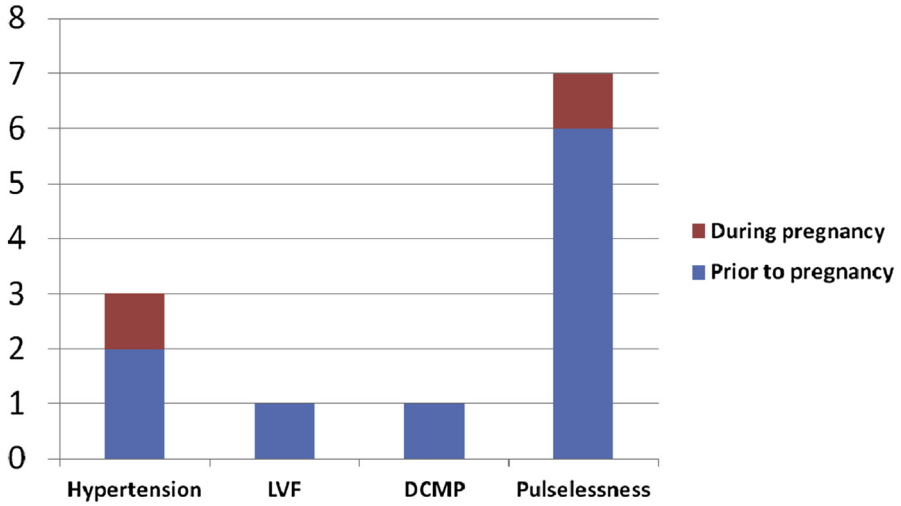

Figure 1. Mode of presentation in patients (n = 12). DCMP = dilated cardiomyopathy; LVF = left ventricular failure.