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Pregnancy with Takayasu Arteritis: A Case Series

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Abstract

Here, we are presenting a case series of 3 women diagnosed at different intervals before and during pregnancy with Takayasu arteritis and different fetal outcomes. Given the predilection of Takayasu arteritis to affect young Asian women [male: female::1:9; 0.3-3.3 per million per year incidence rate worldwide; Asian incidence rate of 40 per million per year; 90% are less than 30years], the Indian institutions need to be cautious to note pointers for early diagnosis and timely management. Pregnancy needs to be planned in the remission period of the disease, along with considerations of the drugs used. Maternal and fetal complications and the risks need to be understood and a multidisciplinary approach is mandated.

Keywords: Takayasu arteritis, auto-immune disease, pregnancy, pre-eclampsia, fetal outcome

Introduction

Takayasu arteritis is a chronic idiopathic inflammatory disease of medium and large sized arteries, most prevalent in women of child bearing age, predominantly in Asian population.[1,2] It is a pan-arteritis with propensity to involve aortic arch and its branches and pulmonary artery.[3] Intimal proliferation, fibrosis, degeneration of elastic lamina are noted with or without narrowing of the lumen and thrombosis. Patients can present with varied spectrum of symptoms including fever, fatigue, weight loss, loss of appetite, limb claudication, Raynaud's phenomenon, syncope, visual complaints, transient ischemic attacks, abdominal pain, chest pain, dyspnoea.[4] Physical examination may lead to detection of absent or reduced peripheral pulses, differences of BP between arms, bruits over neck, supraclavicular areas, and abdomen. CT, MRI or digital subtraction angiography showing tapered luminal narrowing or occlusion accompanied by thickening of vessel wall, these modalities are used for diagnosis.[4] PET-CT is used to assess disease activity. Also, disease activity scores like ITAD, DEI. Tak and damage score- TADS can predict pregnancy outcome, implying more is the disease activity more is the maternal risk of complications and poorer fetal outcome.

Autoimmune diseases can be affected by pregnancy and pregnancy by autoimmune diseases, also pregnancy can unmask autoimmune disorders. This risk is also increased during postpartum period and remains elevated during the subsequent 9 months.[5]

Presence of rheumatic diseases often lead to lower fertility due to disease related factors including drugs which can cause impaired gonadal functioning, pregnancy loss; therapy related avoidance of pregnancy or psychological reasons.[6]

State of the disease in early pregnancy is a definitive factor for determining management. Pregnancy does not exacerbate inflammatory activity of the disease.[7]Early onset hypertension is the commonest complication;[8]superimposed pre-eclampsia, pregnancy related increased maternal intravascular volume causing aortic regurgitation, congestive heart failure, propensity for thrombosis are the other complications. Blood pressure control is the keystone, oscillating between risk rupture of aneurysms, severe pre-eclampsia, aneurysmal rupture, aortic dissection on higher side; and cerebral ischaemia on lower side. Recurrent pregnancy loss[9], intrauterine fetal growth retardation, preterm labour, intrauterine fetal demise; have been noted. Wong's score is used to predict birth weight for neonate born to mother with Takayasu's arteritis.[10]

Case Reviews: We reviewed 3 cases Takayasu arteritis;

	Case 1	Case 2	Case 3
Age	24y	24y	28y
Nationality	Indian	Indian	Indian
Obstetric score	G2P1L1 [previous LSCS]	G3P2L1NND1 [LSCS f/b PTVD]	Primigravida
Weeks of gestation [at presentation]	31weeks IUFD	11weeks	14weeks
Presenting symptoms	Referred i/v/o uncontrolled hypertension	Pulsatile swelling in supraclavicular region, 5x6x6cm [Subclavian artery aneurysm] Lower limb claudication	Admitted for safe confinement and workup, USG s/o missed abortion
Previously diagnosed c/o Takayasu arteritis	Yes	No	Yes
On treatment for TA	No	No	Yes, Developed toxicity to azathioprine; switched to methotrexate and prednisolone
Pregestational hypertension diagnosed and was treatment started	Yes non-compliant to medication	No No	Yes Yes
Medical history	Diagnosed with Takayasu arteritis 6y back, not	No co-morbidities Diagnosed with Takayasu after	H/o right subclavian and common carotid artery

	started on treatment Diagnosed with hypertension 6y back, not compliant to medication Abdominal Koch's - category 1 AKT taken for 6 months	admission	thrombosis, started on anticoagulants H/o hypertension, on treatment H/o extrapulmonary TB
Biochemical results	ESR 23 CRP 15 C3 100 C4 72	ESR 30 CRP 55 C3 110 C4 56	ESR 45 CRP 9.7 C3 147 C4 97.5
Radiological results	CT Aortogram: Extensive intimal calcification Significant narrowing of abdominal aorta Narrowing of left subclavian artery	MR Angiogram: proximal descending aorta aneurysm Narrowing of infrarenal aorta s/o thrombosis 4x5.5x5.2cm saccular outpouching of right subclavian artery- s/o aneurysm Multiple saccular aneurysms in arch of aorta Narrowing of M1, M2 of left MCA, ACA V3, V4 vertebral artery stenosis	CT Angiogram: Diffuse regular, symmetrical thickening of right common carotid artery from its origin from arch of aorta till bifurcation into ECA & ICA.
Management	BP monitored & controlled Rheumatology reference- started on steroids Cariology reference- 2D ECHO noted normal Induction of labour	Started on prednisolone and azathioprine Multidisciplinary consultation + on patient's decision after understanding the high risk of worsening of symptoms and need for definitive intervention for the aneurysms, she was planned for medical termination of pregnancy. Interventional radiological procedure with graft was ruled out as the management of choice in the active inflammatory stage of	Mifepristone+ misoprostol induction f/b check curettage for retained products of conception

		disease. Device closure following MTP was decided.	
Fetal outcome	Macerated still birth	Medical termination of pregnancy at 12 weeks	Missed abortion
Management on follow up	Antihypertensives dose adjusted Methotrexate 5mg Prednisolone started, tapered by 5mg/week and stopped	PET-CT & CT-Angiogram Device closure of subclavian artery aneurysm done after 6 weeks. Methotrexate continued prednisolone started, tapered, and stopped. Empirical AKT started	Continued methotrexate, Prednisolone, antihypertensives.
Current medications	Telmisartan 40mg OD Methotrexate 5mg OD	Methotrexate as per disease activity Category 1 AKT completed	Could not get follow up

Discussion

Takayasu arteritis is a pan-arteritis with intimal proliferation, mono-nuclear cell infiltrates and occasional granulomatous cells. Lesions are segmental with patchy distribution. Women with Takayasu arteritis have poor obstetric outcomes. Hypertension and super-added pre-eclampsia are common maternal complications. Takayasu arteritis is a common cause of renovascular hypertension.[11]Pregnancy being a hypercoagulable state increases risk of thromboembolic events, such as mesenteric artery thrombosis, cardiovascular and cerebrovascular events; along with the intimal injury due to the inflammation and aneurysms resulting in stasis, the disease completes the Virchow's triad.

Low dose aspirin needs to be started to prevent pre-eclampsia and postpartum anti-coagulation is needed.

Treatment is with steroids and immunosuppressant drugs, based on activity of the disease.[12] A multidisciplinary approach is needed to address disease stage and planning of pregnancy, progress of disease in pregnancy and effect of pregnancy on other systems, toxicity of the drugs, complications arising out of immunosuppressants and alternatives to pregnancy category D drugs. Intrapartum parenteral corticosteroids need to be given for patients on prolonged periods of steroids.

Fetal outcomes of Takayasu arteritis range over abortions, recurrent abortions, intrauterine fetal demise, preterm labour, intrauterine growth restriction, low birth weight to documented cases of full-term successful pregnancies.

When patients are encountered with inflammatory signs of unknown origin suggested by raised C- reactive protein concentrations and accelerated erythrocyte sedimentation rate we should suspect vasculitis and request diagnostic assessment with magnetic resonance angiography, or digital subtraction angiography. Thus early diagnosis of Takayasu arteritis can be made before ischemic manifestations are noted.[13] The commonest mode of presentation is hypertension.[12]

Management of patients should include regular contraceptive use, effective treatment of high disease activity, sexual counselling, and, if necessary, infertility

treatment.[14]Rheumatologists can initiate discussions with patients with vasculitis regarding family planning, birth control and medications compatible with pregnancy and lactation. Fertility preservation by monthly GnRH agonist therapy; egg retrieval for egg/embryo freezing and option of surrogacy can be offered as solutions to help patients plan pregnancy.[15]

Conclusion

Pregnancy with Takayasu arteritis hence is a high-risk condition, and is associated with poor fetal outcome.

Close clinical follow up and a multidisciplinary management is mandated.

Pregnancy needs to be planned in remission phase of the disease and when the patient is on pregnancy compatible drugs.

Options of surrogacy and adoption need to be discussed with the couple along with high risks associated with the condition and possible fetal outcomes, before conception of pregnancy.

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