Pulseless: A rare case of successful pregnancy complicated with active Takayasu's arteritis*

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ABSTRACT

Takayasu's arteritis or Pulseless Disease is a rare inflammatory disease of the arteries that affects women of child-bearing age. Vigilance is necessary, since they can develop devastating complications such as hypertension, multiple organ dysfunction, stenosis that hinder regional blood flow, and restricted intrauterine growth. The objectives of this paper are to present a rare case of successful pregnancy in active Takayasu's arteritis, to discuss complication of active Takayasu's arteritis in pregnancy, and to discuss management of pregnancy with active Takayasu's arteritis. A case of a 35-year-old primigravida, who spontaneously conceived with an active case of Takayasu's arteritis is presented. Currently, management of Takayasu's arteritis is ambiguous and no consensus is offered during pregnancy. An interdisciplinary collaboration of obstetricians, perinatologists, rheumatologists, nephrologists and pediatricians are indispensable to improve maternal and fetal prognosis.

Keywords: Takayasu's arteritis, Pulseless Disease

INTRODUCTION

Takayasu's arteritis is a rare, inflammatory condition that affects medium and large size arteries, with an annual incidence of 1.2 – 2.6 cases per million. Women are affected in 80 to 90 percent of cases, with the peak incidence in the second and third decades with the greatest prevalence in Japan.[1]

It primarily affects the aorta and its branches leading to stenosis, thrombosis and the formation of aneurysms.[1] It's clinical manifestation are varied and related to the vessel that presents the stenotic or occlusive lesions.[2]

The probable first local reported case of successful pregnancy with active Takayasu's arteritis is presented. Pregnancy was carried to term despite associated morbidities. Favorable maternal and fetal outcome were achieved through a meticulous collaboration of a multi-disciplinary team and an acquiescent patient.

CASE REPORT

This is a case of M.P., a 35-year-old who claimed to have symptoms such as claudication of upper extremities, arthralgia, myalgia, and chest heaviness radiating to the back 7 years prior to admission which prompted consultation to a private physician where initial systolic blood pressure (SBP) was 200 mmHg. She was then maintained on Amlodipine 10mg/tab once a day (OD). Series of laboratories were requested and revealed normal white blood cell, elevated Erythrocyte Sedimentation Rate (ESR) and non-reactive RA factor (Tables 1.1 and 1.2). Chest X-ray revealed cardiomegaly (Table 3.1), and Arterial Duplex Scan revealed 50-99% stenosis of the subclavian and axillary arteries (Table 3.12). She was then referred to an Interventional Cardiologist and an assessment of Takayasu's arteritis was given. She was then maintained on Prednisone and Methotrexate for which she only took for 3 years which brought total relief of said symptoms. Patient was lost to follow-up but remained asymptomatic. She denied family history of heart, valvular or autoimmune diseases.

Pregnancy test was done after a missed period of two months which revealed positive result. Prenatal check up was started at 8 weeks gestation, with blood pressure of 130/80 mmHg. Bruit was clearly audible on both subclavian arteries. Decreased brachial artery pulse was likewise appreciated on both arms. She was advised to have low salt, low fat diet and started with folic acid 5 mg/tab OD. Transvaginal ultrasound revealed single, live, intrauterine pregnancy 9 weeks by crown rump length with good cardiac activity, (Table 4.1). Prenatal laboratory tests were requested (Tables 1.1, 1.2 and 1.3). She was referred to cardiology and perinatology service for co-management. 12- Lead ECG revealed left ventricular

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hypertrophy (Table 3.2) while 2D Echo requested showed valvular heart disease, aortic valve sclerosis with aortic regurgitation 3+ (Table 3.4).

At 10 weeks gestation, blood pressure was 150/70 mmHg. Fasting blood sugar previously requested revealed elevated result (Table 1.2). Methyldopa 250mg/tab, 1 tab OD and Aspirin 80mg/tab 1 tab OD were started. Capillary blood glucose was monitored 4x a day which revealed controlled values (pre-breakfast: 51-90 mg/dl, 2-hour post meal: 50-119 mg/dl).

At 13 weeks gestation, ESR requested showed normal result (Table 1.2). Referral to rheumatology service was done and suggested to resume Prednisone 10 mg/tab OD until delivery. Prenatal multivitamins, Ferrous sulfate and Calcium were started one tablet of each OD.

At 15 weeks gestation, Abdominal aorta duplex scan was done, which revealed >70% celiac artery and superior mesenteric artery stenosis (Table 3.15). Repeat ESR was also requested and revealed increased level. (Table 1.2).

At 17 weeks gestation, blood pressure was noted to be elevated at 170/70 mmHg. Methyldopa was then increased to 250 mg/tab BID.

Biophysical profile with doppler studies was done at 24 weeks revealed BPS of 8/8 and adequate diastolic blood flow in all the vessel studied (Table 4.3). A complete dose of Betamethasone was given at 25 weeks gestation.

On the third trimester, biophysical profile alternate with non-stress test were done weekly, both of which showed reassuring results. Repeat ESR was requested at 29 weeks gestation revealed further elevated result. (Table 1.2) Aspirin was discontinued at 34 weeks. Repeat ESR was requested at 36 weeks gestation showed normal result (Table 1.2).

At 38 1/7 weeks, patient was admitted due to watery vaginal discharge for 6 hours. Fetal heart tone was noted at 140 bpm. Initial blood pressure was 160/100 mmHg on her right arm, and 180/100 mmHg on her left arm. Capillary blood glucose (CBG) upon admission was 77 mg/dl. Hydralazine 5 mg/IV was given. Cardiotocogram showed reassuring result (Figure 1).

Complete blood count with platelet count, liver function test, lactic acid dehydrogenase, uric acid, blood urea nitrogen, creatinine, urinalysis, 24 hours urine protein were requested (Tables 1.1, 1.2, 2). 24 hours urine protein revealed proteinuria (Table 2). An initial loading dose of Magnessium Sulfate 4 g/IV was then given and Magnessium Sulfate 2g/hr was given for 24 hours. She was then referred back to perinatology, cardiology and rhematology service for co-management. A single stat dose of Clonidine 75 mcg/tab sublingual was given by the cardiology service after which blood pressure was noted at 160/90 mmHg after 15 minutes. Internal Examination revealed a 4 cm dilated cervix, 80% effaced, with cephalic presenting part at station -3 and with ruptured bag of water. With a pain score of 5/10, epidural anesthesia was given. Continuous electronic fetal heart rate monitor revealed fetal bradycardia up to 30 bpm (cFigure 2). With the sudden drop of fetal heart rate, placental abruption was highly considered and emergency primary cesarean section was ultimately decided.

M.P. delivered to a live term baby girl with birth weight of 1.9 kg and with Apgar scores of 8 and 9. Gross inspection of the placenta revealed sign of abruption with 50% detachment from its implantation site. Neonate was sent to the NICU for observation and thermoregulation.

Immediately postoperatively, blood pressure was persistently elevated at 190/120 mmHg. Clonidine 75 mcg/tab sublingual was given by the cardiology service at 15 minutes interval for three doses. However, blood pressure was consistently elevated at 190/120 mmHg. Hence, Nicardipine drip was started at 0.5 mg/hr and gradually increased to 2 mg/hr.

On the first post-operative day, with BP range of 120-180/70-90 mmHg, Nicardipine drip was maintained at 1.5 mg/hr. Prednisone was resumed at 10mg/tab once a day.

On the second post-operative day, with BP range of 110-160/80-100 mmHg, Nicardipine drip was tapered and eventually discontinued. Amlodipine 5 mg/tab OD and Clonidine 75 mcg/tab TID per orem were started. Newborn was roomed in from NICU with stable condition.

The rest of hospital stay was unremarkable. M.P. and newborn were discharged on the 4th hospital.

Follow-up one-week post partum showed blood pressure of 140/70 mmHg. ESR requested still showed elevated result (Table 1.2). Patient was advised to continue Aspirin 80 mg/tab OD, Amlodipine 5 mg/tab OD and 10 more days of Clonidine 75 mcg/tab TID. Prednisone was decreased to 5mg/tab OD.

At 6th week post partum blood pressure was 120/70 mmHg. Ionized Calcium and ESR requested showed normal and elevated result respectively (Table 1.2). Follow-up with both cardiology and rheumatology service were continued.

DISCUSSION

Due to its rarity, the exact incidence of Takayasu's arteritis in pregnancy in the Philippines is still unknown. With review of literature, local research revealed a case report on the first documented case of Takayasu's arteritis and antiphospholipid antibody syndrome complicating a pregnancy in a multigravida, however, the pregnancy resulted to fetal loss.[3]

The index case presented is probably the first local reported case of successful pregnancy with active Takayasu's arteritis complicated by preeclampsia and intrauterine growth restriction which was carried to term and with favorable maternal and eventual good fetal outcome.

Takayasu arteritis predominantly affects women during their reproductive years.[4] M.P. was diagnosed seven years prior to pregnancy and conceived spontaneously at age 35.

According to American College of Rheumathology, criteria for the classification of Takayasu's arteritis includes (1.) age < 40 years, (2.) claudication of extremities (3.) decreased brachial artery pulse, (4.) BP difference > 10 mmHg, (5.) bruit over subclavian arteries or aorta, and (6.) arteriogram abnormality. For purposes of classification, a patient shall be said to have Takayasu arteritis if at least three of these six criteria are present.[4] M.P. exhibits all of the six criteria. She was diagnosed at age 28 with symptoms of claudication of upper extremities, arthralgia, myalgia, and chest heaviness. Initial blood pressure upon admission was 160/100 mmHg on her right arm, and 180/100 mmHg on her left arm which is >10 mmHg difference between the systolic pressures. Bruit was appreciated on auscultation of the subclavian arteries during the first prenatal check-up. Investigations to document arteriogram abnormality were likewise done in the course of her illness. Peripheral Angiogram of Upper Extremities revealed severe to complete stenosis of the proximal left subclavian artery (Table 3.5). Duplex scan of peripheral arterial system of the lower extremities and upper extremities showed 20-49% and 50-99% stenosis respectively (Table 3.6, 3.8). Carotid Duplex Scan uncovers significant stenosis (Table 3.10) while Arterial Duplex Scan revealed non-atherosclerotic tapering pattern (Table 3.12) and Abdominal Aorta Duplex Scan showed > 70 % stenosis of both celiac artery and superior mesenteric artery. (Table 3.13).

Criteria for active disease according to Kerr are features of vascular ischemia or inflammation such as vascular pain or carotodynia, claudication, diminished or absent pulse, bruit, asymmetric blood pressure in either upper or lower limbs or both, elevated ESR, systemic features such as fever, musculoskeletal features without any other cause identified and typical angiographic features. New onset or worsening of two or more features indicates "active disease". Criteria for remission includes complete resolution or stabilization of all clinical features and fixed vascular lesions.[5] M.P. is classified to have active disease which is considered to be the late, occlusive or pulseless phase on the basis of claudication, diminished brachial pulse, asymmetric blood pressure, elevated ESR, musculoskeletal features such as arthralgia, myalgia and chest heaviness radiating to the back, and angiographic features as mentioned earlier.

Duplex scan of the upper extremities was done in the index patient as previously stated, where stenosis of both the subclavian arteries was noted (Table 3.9). Due to this stenosis there would be high resistance, therefore there would be decreased flow of blood to peripheral arteries such as the axillary artery, the brachial artery, and the radial artery, resulting to a weak pulse, hence the name the Pulseless Disease. Thereby, producing the symptom of claudication that was felt by the patient and the observed faint pulse of the upper extremities compared with the pulse of the lower extremities. If the common carotid arteries are involved, it will cause decreased blood flow to brain, decreased cognition, drowsiness, and blurring of vision.

Hypertensive complications such as preeclampsia, and exacerbation of chronic hypertension, and fetal complications, such as intrauterine growth restriction (IUGR), abortion, and fetal death, have been reported in 60-90% of cases.[6] The index case presented showed Takayasu's arteritis complicated with preeclampsia and intrauterine growth restriction.

Several studies and a recent meta-analysis showed that patients at high risk of preeclampsia who took low dose aspirin during pregnancy had a lower incidence of this disease, especially severe preeclampsia, as well as IUGR. These benefits were more pronounced when the prophylactic medication was started before 16 weeks.[7] Aspirin was started on the 10th week of gestation in the index case, however, complications such as pre-eclampsia and intra-uterine growth restriction were still evident.

During antepartum, blood pressure control is most important, because it's increases can cause rupture of aneurysm and falls in blood pressure can lead to cerebral ischemia in the mother. Routine test in pregnant patients with Takayasu arteritis include serial ultrasound growth assessment, umbilical artery Doppler studies, and biophysical profile assessment from 24 weeks of gestation.[7]

In the index case, series of ultrasound (Tables 4.1, 4.4 – 4.6), Doppler velocimetry (Table 4.3) and NST (Figure 1) were all done on the course of pregnancy.

Elevated blood pressure during antepartum may be treated aggressively with Methyldopa, calcium channel blocker, and hydralazine.[7] In this case, elevated blood pressure was prenatally controlled with Methyldopa, antenatally with Hydralazine and postoperatively with Nicardipine, Clonidine and Amlodipine.

In the case of relapse Takayasu arteritis disease during pregnancy, treatment consists of Prednisone 1mg/

kg/day until the disease control is obtained, thereafter Prednisone can be tapered to the lowest effective dose.[8] Prednisone 10 mg/tab OD was started in the index case at 15 weeks of gestation as recommended by the rheumatology service. It was continued all throughout pregnancy and was later decreased at postpartum to 5 mg/tab OD.

Vaginal birth is possible, but only in patients with stable hemodynamic status and frequent evaluation of blood pressure. Oxytocin augmentation during the active stage of labor and relief of pain preferably with epidural anesthesia are recommended. Since there is an increased rate of intra-uterine growth restriction in pregnant women with Takayasu arteritis, acute fetal distress can be more frequent and intensive monitoring of these fetuses is advised.[9] Cesarean delivery should be performed for obstetrics indications.[10]

The index patient was admitted due to watery vaginal discharge. Trial of labor and attempt of vaginal delivery were the initial main goal. However, cesarean delivery was deemed necessary due to a high suspicion of abruptio placenta coupled with non-reassuring fetal heart rate pattern (Table 2).

Postpartum care of the index patient was continued meticulously by the multi-disciplinary team of obstetrics service, perinatology service, cardiology service and rheumatology service. Neonatal care was also critically handled by the pediatric service. The ultimate goal to deliver a term fetus with good blood pressure control and optimal outcome for both M.P. and her baby was achieved. They were together cleared for discharge on the fourth post-operative day with careful and detailed home instructions.

Contraception should be discussed postpartum to since progressive disease results to complicated pregnancies. Oral contraceptive containing estrogen for should be avoided. Progesterone only contraceptives are preferable and tubal ligation can be advised upon completion of family.[10] Patient opted for natural contraception in the form of periodic abstinence by rhythm method.

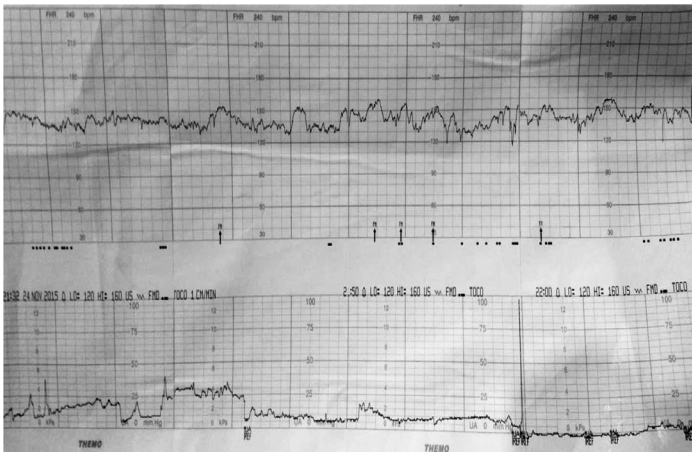

Figure 1

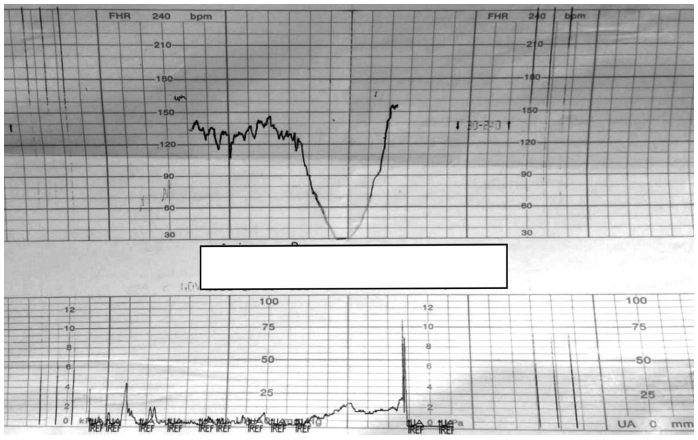

Figure 2

Table 1.1 Hematology and Blood Chemistry

	Normal Values	5/28/08	4/28/15	10/14/15	11/2	12/2/15
Hgb	110- 160 g/L	112	116	118	134	130
Hct	0.37 – 0.47	0.33	0.34	0.35	0.40	0.39
Platelet	150 – 400 x 109/L	Adequate	Adequate	257	205	Adequate
WBC	5 – 10 x 1012/L	8.4	7.30	16.91	15.4	12.20
Segmenters	0.36 – 0.66	0.69	67	82.4	90	80
Lymphocytes	0.22 – 0.40	0.21	25	11.5	6	17
Monocytes	0.04 – 0.06	0.06	8	5.6	3	3
Eosinophils	0.01 – 0.04	0.01	-	0.4	1	

Table 1.2

	Normal Values	5/28/08	4/28/15 (8wks)	6/4/15 (13 1/7 wks)	7/2/15 (17 wks)	9/23/15 (29 1/7 wks)
ESR	0 – 20.0 mm/hr (non pregnant) 1st trimester: 4-57 mm/hr 2nd trimester: 7-47 mm/hr 3rd trimester: 13-70 mm/hr	54		55	58	95
RA- Factor		Non-reactive				
HbsAg		Non-reactive				
VDRL		Non-reactive				
TSH	0.35 – 5.40 uIU/mL	1.66				
FT4	0.71 – 1.85 ng/dL	1.21				
FBS	76.36 – 116.36 mg/dL Pregnant normal value: < 92 mg/dl	76.36	93.86			
BUN	4.76 – 23.25 mg/dL	9.80		13.92		
Creatinine	0.50 – 1.10 mg/dL	0.60		0.52		
Uric acid	2.39 – 5.70 mg/dL	5.56				
SGOT/AST	0-46 U/L			22.63		
SGPT/ALT	0-49 U/L			26.26		
LDH	103-227 U/L			326		
Triglycerides	40.35 – 150.00 mg/dL	50.88				
Total Cholesterol	150 – 200 mg/dL	130				
Na	136 – 146 meq/L	138				

Table 1.3

	Normal Values	11/11/15 (36 1/7 wks)	11/25/15 (38 1/7 wks)	12/2/15 (7 Days post partum)	1/4/16 (40 Days post partum)	11/11/15 (36 1/7 wks)
ESR	0 – 20.0 mm/hr (non pregnant) 1st trimester: 4-57 mm/hr 2nd trimester: 7-47 mm/hr 3rd trimester: 13-70 mm/hr	65		56	40	65
BUN	4.76 – 23.25 mg/dL		9.44			
Creatinine	0.50 – 1.10 mg/dL		0.45			
Uric acid	2.39 – 5.70 mg/dL		8.81			
SGOT/AST	0-46 U/L		22			
SGPT/ALT	0-49 U/L		20			
LDH	103-227 U/L		189			
Ionized Calcium	4.4-5.3 mg/dl				4.4	

Table 2. Urinalysis

	5/28/08	4/28/15	6/4/15	10/14/15	10/22/15	11/25/15
24 hrs urine protein			97.45 mg/ 24 hr			1334 mg/ 24 hr
Color	Yellow	Light yellow		Yellow	Straw	Light yellow
Transparency	Hazy	Slightly hazy		Slightly hazy	Clear	Clear
Specific gravity	1.015	1.015		1.015	1.005	1.010
pH	6.0	6.5		7.0	6.5	7.0
WBC	2-6/ HPF	1-2		15-20	0-1	0-2
RBC	8-12/ HPF	0-2		2-4	0-1	2-5
Protein	Negative	Negative		Negative	Negative	+2
Glucose	Negative	Negative		Negative	Negative	Negative
Ketone	Negative	Few				
Epithelial cells	Few	Occasional		Moderate	Few	
Mucus threads	Few	Few		Few	Rare	
Bacteria	Occasional	Occasional		Moderate	Rare	

Table 3

	DATE	MISCELLANOUS LABOTORIES	INTERPRETATION
3.1	**5/28/2008**	**CHEST X-RAY**	• Cardiomegaly
3.2	**4/28/2015**	**ECG**	• Left ventricular hypertrophy
3.3	**5/28/2008**	**2D-Echo with Doppler**	• Concentric left ventricular hypertrophy with adequate wall motion and contractility • Dilated left atrium • Normal right atrium, right ventricle, main pulmonary artery and aortic root dimensions • Thickened mitral valve leaflets • Thickened right coronary cusp and non-coronary cusp without restriction of motion • Structurally normal tricuspid and pulmonic valves • No thrombus nor pericardial effusion noted • Intact interatrial and interventricular septae • Normal ascending, transverse, and proximal descending aorta • COLOR FLOW DOPPLER: • Mild aortic and pulmonic regurgitation • Normal mitral E/A velocity • Normal pulmonary artery pressure
3.4	**5/16/2015**		• Technically difficult study due to poor echogenic window • Valvular Heart Disease • Aortic valve sclerosis with aortic regurgitation 3+. Thickened aortic valve cusps with no restriction of motion. Bicuspal physiology cannot be totally rule out. • Mild mitral regurgitation. • Mild tricuspid regurgitation and pulmonic regurgitation. • Structurally normal tricuspid valve and pulmonic valve • Concentric left ventricular hypertrophy with good wall motion and systolic function. Normal left ventricular dimension with increase ventricular mass index and relative wall thickness. • Dilated left atrium. • Normal right atrium, right ventricle, main pulmonary artery and aortic root dimeters. • Normal pulmonary artery pressure by pulmonary acceleration time.

	DATE	MISCELLANOUS LABOTORIES	INTERPRETATION
3.5	**11/27/2008**	**Peripheral Angiogram of Upper Extremities**	• Severe to complete stenosis of the proximal left subclavian artery with patent distal segment and left vertebral artery which is highly suggestive of subclavian steal syndrome. • Concentric aortic wall thickening including its main branches with enlarged pulmonary trunk and prominent pulmonary arteries. This is consistent with the patient's clinical history of Takayasu's Arteritis.
3.6	**11/21/2008**	**Duplex scan of peripheral arterial system – LOWER EXTREMITIES**	• Normal arterial duplex scan, bilateral lower extremities • Unreliable ankle-brachial indices, bilateral posterior tibial and left dorsalis pedis arteries • Normal ankle-brachial index, right dorsalis pedis artery
3.7	**9/17/2010**		• Lower extremities arterial disease with: • 20-49% stenosis in the right mid-superficial femora, distal posterior tibial, distal anterior tibial and dorsalis pedis, left proximal superficial femoral and proximal posterior tibial arteries • 1-19% stenosis in the rest of the arterial segments insolated
3.8	**3/24/2010**	**Duplex scan of peripheral arterial system – UPPER EXTREMITIES**	• Upper extremities arterial disease with 50-99% stenosis in the right subclavian, axillary, and left brachial arteries • Equivocal wrist-brachial index in the right upper extremity • Mild limb disease in the left upper extremity • Normal finger-brachial index in the right upper extremity • Mild limb disease in the left upper extremity
3.9	**9/17/2010**		• Upper extremities arterial disease with 50-99% stenosis in the right subclavian, axillary and bilateral proximal brachial arteries • Abnormal wrist-brachial indices, bilateral upper extremities • Normal finger-brachial index, right upper extremity • Abnormal finger-brachial index, left upper extremity
3.10	**11/21/2008**	**Carotid Duplex Scan**	• Carotid artery disease with: • Significant stenosis in the right vertebral artery • Complete subclavian steal phenomenon, left • Common carotid artery-intima media thickness
3.11	**9/17/2010**		• Compared with previous study done (11/21/2008): B-mode imaging showed increase in intimal thickening and generalized increase in peak systolic velocity with high resistance waveform pattern in the bilateral common carotid, internal carotid, and external carotid arteries. • Increased peak systolic velocity with turbulent in the right vertebral artery. • Reversed flow in the left vertebral artery with increased peak systolic velocity in the left subclavian artery
3.12	**6/16/2008**	**Arterial Duplex Scan**	• Non-atherosclerotic tapering pattern noted on the bilateral subclavian and axillary arteries • Upper extremity artery disease, non-atherosclerotic: 50 -99% stenosis – right mid to distal subclavian and axillary arteries; left proximal to distal subclavian and axillary arteries • Incidentally, the left vertebral artery shows complete reversed flow pattern suggestive of a subclavian steal.
3.13	**1/13/2009**	**Abdominal Aorta Duplex Scan**	• > 70-99% stenosis in the celiac artery • > 70-99% stenosis in the superior mesenteric artery
3.14	**6/22/2010**		• > 70-99 % stenosis in the celiac artery • > 70-99 % stenosis in the superior mesenteric artery • No evidence of abdominal aortic aneurysm
3.15	**6/20/2015**		• Consider > 70 % celiac artery and superior mesenteric artery • Elevated peak systolic velocities along the bilateral renal arteries but did not satisfy the criteria for significant stenosis • Normal sized abdominal aorta, mesenteric arteries, renal arteries, and bilateral common iliac arteries

	DATE	MISCELLANOUS LABOTORIES	INTERPRETATION
3.16	**1/13/2009**	**Renal Duplex Scan**	• Equivocal for more than or equal 60% renal artery stenosis, bilateral mid-distal segments • Renal parenchymal disease, right • No evidence of renal parenchymal disease, left • Normal kidney size, bilateral
3.17	**6/22/2010**		• Equivocal for > 60% renal artery stenosis, left • Renal parenchymal disease, bilateral • No evidence of renal artery stenosis, right • Renal cyst, right • Normal kidney size, bilateral

Table 4

	DATE	SONOGRAPHY	INTERPRETATION
4.1	**May 7, 2015 10 6/7 weeks by LMP**	**Transvaginal Sonography**	• Single, live, intrauterine pregnancy 9 weeks by crown rump length with good cardiac activity. Normal ovaries with corpus luteum in the right. Multiple myoma uteri (M1 - intramural subserous, left posterolateral 4.17 x 4.37 x 4.49 cm; M2 – Intramural, upper posterior 1.43 x 1.0 x 1.16 cm; M3 - Subserous, anterior 9.11 x 8.69 x 7.0 cm). Long and closed cervix (3.19 x 3.29 x 3.03 cm).
4.2	**January 4, 2016 (postpartum Day 40)**		• Myoma uteri (subserous myoma noted on the anterior wall of the uterus 6.45 x 7.14 x 9.43 cm), retroverted uterus, proliferative endometrium, small follicles, both ovaries (Right ovary 1.6 x 1.9 x 4.7 cm with 3 follicles: 4.4, 4.6, & 4.7 mm, Left ovary 2.83 x 1.78 x 1.55 cm with 2 follicles: 4.8 and 5.1 mm), no fluid in the cul de sac.
4.3	**August 19, 2015 24 1/7 weeks by LMP**	**Biophysical Profile with Doppler studies**	• Single, live, intrauterine pregnancy, breech presentation, 22 weeks 3 days composite sonar age with good cardiac and motor activity. Placenta is left lateral in location with grade 2 maturity. Normohydramnios (12.40cm). Myoma uteri (9.15x7.86x9.8cm, subserous myoma noted on the right fundal portion of the uterus).BPS: 8/8. • Doppler velocimetry shows adequate diastolic blood flow in all the vessel studied.
4.4	**September 17,2015 28 2/7 weeks by LMP**	**Biophysical Profile**	• Single, live, intrauterine pregnancy, cephalic, female, 26 weeks 1-day composite sonar age with good cardiac and motor activity. Placenta is left lateral high lying with grade 2 maturity. Normohydramnios (13cm). EFW: 891 gms, appropiate for age (36 th percentile). Multiple Myoma uteri (M1: subserous, right lateral 9.07 x 8.79 x 8.82cm; M2: intramural and mid anterior 1.6 x 1.8x 1.99 cm).BPS: 8/8.
4.5	**October 14,2015 32 1/7 weeks by LMP**		• Single, live, intrauterine pregnancy, cephalic, female, 30 weeks with good cardiac and somatic activity. Placenta is left anterior high lying with grade 2 maturity. Normohydramnios (12.14 cm). EFW: 1466 gms, appropiate for age (33rd percentile).Biometric ratio within normal limits. Myoma uteri 9.57 x 8.47 x 9.2 cm. BPS: 8/8.
4.6	**November 11, 2015 36 1/7 weeks by LMP**		• Single, live, intrauterine pregnancy, cephalic, female, 31 weeks 6 days with good cardiac and somatic activity. Placenta is left anterior high lying with grade 2-3 maturity. Normohydramnios (12.68 cm). EFW: 1895 gms, appropiate for age (45 th percentile).Biometric ratio within normal limits.BPS: 8/8.

SUMMARY

Takayasu's arterititis is rare. Even rarer is successful pregnancy in patients classified with active disease. There are only a handful of case reports in literature that describe pregnant women with this disease. The most favorable guidelines for the management of these patients are not yet clearly established. Because of the diverse cardiovascular complications that may transpire during the course of the disease, management of patients with Takayasu's arteritis during pregnancy is a challenge for Obstetricians. Good prenatal care is the crucial cornerstone to ultimately prevent pregnancy complications and even fetal death. The optimal mode of delivery should be individualized with careful attention to the risks associated with the complications of Takayasu's arteritis. An uneventful outcome is not impossible with the conscientious cooperation of the different inter-disciplinary team of Obstetricians, Perinatologists, Rheumatologists, Cardiologists and Pediatricians coupled with good patient compliance. ■

REFERENCES

1. Battiston Decruse Waanbah, Swati Rathore, Santosh Joseph Benjamin, Beena Kingsbury. Pregnancy with Takayasu's Arteritis. Case series. *Indian Journal of Obstetrics and Gynecology Research*. 2016; 3(4):422-425.

2. Histoshi Ogino, MD, PhD, Histoshi Matsuda, MD, PhD, Kenji Minatoya MD, PhD. et.al. Overview of Late Outcome of Medical and Surgical Treatment for Takayasu Arteritis. Circulation. 2008; 188:2738-2747.

3. R.S. Jean-Jacquet. Takayasu's Arteritis and antiphospholipid antibody syndrome in pregnancy. *Philippine Journal of Obstetrics and Gynecology*. July 1998; 22(3):99-106

4. Madhusudan Dey, Lt Col, Anupam Kapur, Surg Capt, S. Goyal, Maj, R.D. Wadhwa, Brig, VSM (Retd), A. Srivastava, Col, R. Agarwal, Col. Takayasu arteritis in pregnancy. *Medical Journal Armed Forces India*. 2015 July; 71(Suppl 1):S227-S229.

5. SS Kothari. Takayasu's arteritis in children – a review. *IMAGES in Paediatric Cardiology*. 2001; 3(4):2-23.

6. de Jesus GR, d' Oliveira IC, dos Santos FC, et al. Pregnancy may aggravate arterial hypertension in women with Takayasu arteritis. Israel Medical Association Jornal, 2012; 14(12): 724-8

7. Nabil A. Shafi MD, Amyn Malik MD, David I. Silverman MD. Management of Takayasu Arteritis During Pregnancy. The Journal of Clinical Hypertension, 2009; 11(7): 383-385

8. A. Doria, G. Bajochi, M. Tonon, C. Salvarani. Pre-pregnancy counselling of patients with vasculitis. British Society of Rheumatology 2008, 47:iii12-iii15

9. Papantoniou N, Katsoulis I, Papageorgiou I, Antsaklis A. Takayasu Arteritis in Pregnancy: Safe Management Options in Antenatal Care. Case report. Fetal Diagn Ther.2007;22:449–451

10. A. Bassa, D.K. Desai, J. Moodley. Takayasu's disease and pregnancy. S Afr Med J 1995; 85: 107-112