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**Impairment in aortic elastic properties and mechanics of carotid artery system in patients with Takayasu’s arteritis**

F. Alibaz-Oner1, S. Yurdukul2, S. Aytekin2, H. Direskeneli1

1. Marmara university, school of medicine, rheumatology, Istanbul, Turkey
2. Florence Nightingale hospital, cardiology division, Istanbul, Turkey

**Introduction**— Takayasu arteritis (TA) is a chronic vasculitis of the aorta, its major branches. Impairment of the elasticity in the involved arteries is an important feature of vascular injury. We aimed to evaluate aortic, carotid artery elastic properties, to assess carotid arterial mechanics by using a novel strain imaging method, “velocity vector imaging” (VVI), in TA, and to compare them to systemic lupus erythematosus (SLE).

**Methods**— We studied 31 patients with TA (F/M, 29/2; mean age: 31.4), 18 patients with SLE (F/M, 17/1; mean age: 32.3), 20 age and sex-matched controls. All patients and controls were subjected to assessment of aortic strain, stiffness, distensibility, carotid artery stiffness index measurements. VVI analysis was performed to determine longitudinal and radial tissue motion of the common carotid arteries (CCA).

**Results**— Aortic strain was significantly impaired in patients with TA, compared with controls (5.77 ± 3.2% vs 13.91 ± 4.77%, *P* = 0.0001), while aortic stiffness (6.17 ± 5.1 vs 2.6 ± 1.3, *P* = 0.003), carotid artery stiffness index (4.97 ± 3.3 vs 1.96 ± 0.72, *P* = 0.0001) were markedly increased. We revealed a significant decrease in aortic distensibility TAK, when compared to controls (0.47 ± 0.3 vs 1.64 ± 0.77, *P* = 0.0001). We did not observe difference SLE patients and the controls, regarding aortic strain (*P* = 0.43), aortic stiffness (*P* = 0.93) and carotid artery stiffness index (*P* = 0.94) measurements. However, aortic distensibility was also decreased in patients with SLE, compared to controls (0.61 ± 0.3 vs 1.64 ± 0.77, *P* = 0.0001). VVI measurements were obtained from off-line analysis of standard B-mode ultrasound images of the CCA (table I).

**Conclusion**— TA associated with reduced elasticity of the aorta and carotid artery system. Longitudinal and radial wall motion of CCA is impaired in patients with TA and SLE, due to the vascular inflammation. VVI is a feasible, novel strain imaging method in assessing the mechanical properties of the arterial system, in patients with chronic vascular inflammation.

**Table I**

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<td><strong>The results of Velocity Vector Imaging of patients and controls</strong></td>
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*P* value for TAK compared with controls. **P** value for SLE compared with controls.

**Discussion**— Takayasu arteritis is a chronic, inflammatory large vessel vasculitis. Chronic inflammation is one of the most important risk factors for endothelial dysfunction and atherosclerosis.

**Conclusion**— In the present study, we detected significantly decreased FMD and increased CIMT in TAK patients, suggesting a marked endothelial dysfunction. Chronic inflammation and vascular fibrosis might lead to increased atherosclerosis in TAK.

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**P86**

**The higher response of pandemic influenza vaccination in Takayasu’arteritis: A prospectively controlled study**

A.L. Calich1, S.T. Shinjo1, A.C. Ribeiro1, N.E. Aikawa1, M. Levy-Neto1, C.G. Saad1, A.R. Precioso2, M.D.C. Timenetsky3, E. Bonfa1, R.M. Pereira1

1. Universidade de São Paulo, faculdade de medicina, São Paulo, Brazil
2. Instituto Butantan, São Paulo, Brazil
3. Universidade de São Paulo, instituto Adolfo Lutz, faculdade de medicina, São Paulo, Brazil

**Introduction**— Despite the World Health Organization recommendation to vaccine immunocompromised patients against influenza vaccine containing the A/California/7/2009 (H1N1) virus there is no data in the literature regarding vaccine immunogenicity and safety in Takayasu’arteritis patients (TA).

**Methods**— Twenty-nine TA and 87 healthy controls were vaccinated with an unadjuvanted influenza A/California/7/2009 (H1N1) strain and evaluated pre- and 21 days post-vaccination. The immunogenicity end-points included seroprotection, seroconversion, geometric mean titres (GMT) and factor increase (FI) in GMT. Disease activity parameters to controls (0.61 ± 0.3 vs 1.64 ± 0.77, *P* = 0.0001). GMT measurements were obtained from off-line analysis of standard B-mode ultrasound images of the CCA (table I).

**Conclusion**— TA associated with reduced elasticity of the aorta and carotid artery system. Longitudinal and radial wall motion of CCA is impaired in patients with TA and SLE, due to the vascular inflammation. VVI is a feasible, novel strain imaging method in assessing the mechanical properties of the arterial system, in patients with chronic vascular inflammation.

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Clinical features included constitutional symptoms in 62%, Lt. carotid a. (46%), Rt. carotid a. and Rt. vertebral a. (38%, each), descending aorta (69%), renal as. and Rt. subclavian a. (54%, each), and mycophenolate mofetil) did not affect seroconversion (P > 0.05). Pre-vaccination evaluation revealed that disease duration, disease activity parameters (ESR, CRP), glucocorticoid use and immunemediating medication use (methotrexate, azathioprine, leflunomide and mycophenolate mofetil) did not affect seroconversion (P > 0.05).

No severe adverse events were observed.

Conclusion.—This prospective study of influenza A H1N1 vaccination in TA patients is the first study that evaluated vaccine response in this disease. The higher response in patients compared to controls, appears to reflect the enhanced T and B cell response previously described in TA disease.

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P87
Takayasu’s arteritis in southern Sweden
A. Mohammad, T. Mandl
Skåne university hospital, Lund university, department of rheumatology, department of clinical sciences, Lund, Sweden

Purpose.—To study the epidemiology and clinical characteristics of Takayasu’s arteritis (TAK) in a well-defined population in southern Sweden.

Methods.—The study area consists of three healthcare districts, with a total population of 983,419 as of January 1, 2011 (50.5% women), situated in Skåne, the southernmost county of Sweden. Patients were identified using clinical registries at the Departments of Rheumatology, Nephrology and Internal Medicine at the five hospitals in the study area, as well as at all private Rheumatology clinics. The diagnosis of TAK was confirmed by medical records review. Only patients fulfilling the ACR classification criteria for TAK 1990 were included.

Results.—Thirty patients fulfilling the ACR criteria for TAK (all women) were identified. Eight patients were of Swedish ancestry, one Asian, two Arabs, one African and one patient from northern Europe. The median age at diagnosis was 23 years (range 8–60). Eleven patients were diagnosed in the study area between 1997 and 2011. The annual incidence rate per million inhabitants was estimated to 0.8 (95% CI 0.3–1.3) for the whole population, and 1.6 among women (95% CI 0.7–2.5). No deaths occurred during a median follow-up time of 95 months (range 11–346). The point prevalence (June 1, 2012) per million inhabitants was 13.2 (95% CI 6.0–20.4) for the whole population, and 26.2 among women (95% CI 11.9–40.4).

The distribution of arterial lesions was: Lt. subclavian a. (77%), descending aorta (69%), renal as. and Rt. subclavian a. (54%, each), Lt. carotid a. (46%), Rt. carotid a. and Rt. vertebral a. (38%, each). Clinical features included constitutional symptoms in 62%, intermittent claudication in 46%, non-specific chest or abdominal pain in 31%, arthralgia/myalgia in 46% and hypertension in 23%.

Conclusion.—The clinical characteristics and incidence of TAK in southern Sweden were comparable with previous European studies. The prevalence of TAK in our area was higher than previously reported in Sweden and other European countries.

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P88
ITAS.A suggests persistent disease activity in Takayasu aorto-arteritis after 6 months induction therapy
P. Bacon
United Kingdom

Introduction.—The Indian Takayasu Activity Index (ITAS) was originally developed as a clinical index of disease activity in Takayasu arteritis. Use of ITAS2010 in Indian clinics showed significant elevation of values in clinically active cases compared to inactive disease on physicians’ judgement. However the PGA previously used to decide disease activity reflects acute phase response as well as clinical features. We therefore developed a variant index, ITAS.A, to include either ESR or CRP values assigned a score of 0–3 on an arbitrary scale.

Methods.—ITAS.A was compared to the purely clinical index ITAS2010 when used to assess response to therapy in 2 centres. In Vellore 132 patients with active disease were studied at presentation and at 3, and 6/12 after therapy with steroids plus mycophenylate. In Lucknow, 46 patients were assessed at time 0 and 6/12 after therapy with steroids plus methotrexate. The Takayasu Damage Score (TADS) was also used to assess development of damage at 6/12.

Results.—In both series the ITAS2010 indicated satisfactory suppression of clinical disease activity at 6/12 (RM/DD x% of patients with an ITAS score of ≤ 1?%). However the combined ITAS.A score, despite a fall from the initial values, indicated continued disease activity at 6/12 (2% of pts with an ITAS.A value > 2??). The values of ITAS.A derived from either ESR or CRP were closely related at each centre, justifying designation of ITAS.A to cover whichever value was in local use. The TADS data showed accumulation of damage at 6/12 possibly related to continuing activity.

Discussion.—The ITAS.A index suggested an incomplete response to therapy with persistent disease activity at 6/12, despite the clinical improvement. This was seen in two centres using an immuno-suppressive plus steroids, although with different regimes. This is consistent with the high relapse rate noted when steroids were withdrawn, the slow clearance of hot PET scans, and the scanty evidence of active inflammation in biopsies from clinically inactive disease. Persistent activity would predict development of damage and indeed positive TADS scores were seen at 6/12. Longer-term follow up is underway to examine whether this continues and its relationship to the degree of initial activity scores.

Conclusion.—ITAS.A, combining clinical plus acute phase response, provides new information. It suggests an incomplete response to therapy with persistent disease activity at 6/12, despite the clinical improvement, which has implications for therapy.

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