

## PP-107

**Brucellosis may Impair Endothelial Functions in Chronic Symptomatic Patients without Overt Cardiac Involvement**

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**Introduction:** Brucellosis is a worldwide zoonosis and may involve any organ system. Cardiac complications from brucellosis are unusual and usually manifest as endocarditis. Vascular complications due to Brucella infection have rarely been reported in the medical literature. In this study, we aimed to investigate the cardiac and endothelial functions in adult and adolescent patients with brucellosis.

**Methods:** 53 patients with brucellosis and 50 healthy volunteers were enrolled in this retrospective study. The diagnosis was established by Rose-Bengal test, subsequent positive standard Brucellatube agglutination test (titer  $\geq 1/160$ ) and/or isolation Brucellae species from blood or other body fluids in the patients with sign and symptoms compatible with brucellosis. Medical treatment included streptomycin (1 g/day) and doxycycline (200 mg/day). The patients with brucellosis were further classified into three groups: new-onset brucellosis (group 1), patients in remission (group 2) and chronic symptomatic brucellosis (group 3). Healthy patients were classified as group 4. All patients underwent transthoracic echocardiographic study for cardiac evaluation. Flow mediated dilatation of the brachial artery was measured by Doppler ultrasonography for evaluation of endothelial functions in all groups. Patients with hypertension, diabetes and known cardiac or other systemic disease were excluded. Kruskal Wallis test was used for evaluation of statistical significance between groups.

**Results:** The groups 1 to 4 included 15, 21, 17 and 50 patients, respectively. The study was comprised of 28 female and 25 male patients (mean age =  $34 \pm 14$ ) with brucellosis (Group 1-3). The group 4 included 25 female and 25 male healthy individuals (mean age =  $35 \pm 15$ ). Echocardiographic evaluation of left ventricular systolic and diastolic functions revealed no difference between the 4 groups and no significant cardiac valvular pathology was observed; only three patients with brucellosis had mild mitral regurgitation that could be interpreted as incidental finding. The brachial artery diameter at baseline was similar between these 4 groups ( $28 \pm 2.2$  mm,  $28 \pm 1.7$  mm,  $29 \pm 2.4$  mm and  $29 \pm 1.6$  mm, respectively;  $p=0.78$ ). Measured brachial artery diameter after hyperemia was  $33 \pm 2.4$  mm,  $33 \pm 1.7$  mm,  $31 \pm 2.2$  mm and  $33 \pm 1.7$  mm, respectively ( $p=0.03$ ). Accordingly, there was significant difference between these groups in terms of flow mediated dilatation ( $16 \pm 1.3\%$ ,  $16 \pm 2.4\%$ ,  $10 \pm 4.7\%$ ,  $15 \pm 2.1$ ;  $p<0.001$ ). Post-hoc analysis showed significantly low FMD in patients with chronic symptomatic brucellosis infection (group 3) compared to patients in other groups.

**Conclusions:** This is the first cohort of patients with brucellosis and associated endothelial functions. Brucellosis may impair endothelial functions in chronic symptomatic patients without overt cardiac involvement. Large-scaled studies are required to confirm these findings.

## PP-108

**Aortic Distensibility and Aortic Intima-Media Thickness in Patients without Clinical Manifestation of Atherosclerotic Cardiovascular Disease**

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**Background:** There is growing evidence that aortic distensibility (AD) is a subclinical marker of early atherosclerosis. Aortic intima-media thickness (IMT) was an earlier marker than carotid IMT of preclinical atherosclerosis. In present study, we aimed to assess the relationship between thoracic aortic IMT and AD.

**Methods:** We studied 192 patients (mean age:  $45.5 \pm 8.4$  years) who underwent transesophageal echocardiography (TEE) for various indications. Four different grades were determined according to IMT of thoracic aorta (Grade-1  $< 1$  mm;  $1 \text{ mm} \leq$  Grade-2  $< 3$  mm;  $3 \text{ mm} \leq$  Grade-3  $< 5$  mm;  $5 \text{ mm} \leq$  Grade 4). AD was calculated from the echocardiographically derived ascending aorta diameters and hemodynamic pressure measurements in all patients. High sensitive C-reactive protein (hsCRP) and other biochemical markers were measured with an automated chemistry analyzer.

**Results:** TEE evaluation characterized thoracic aortic intimal morphology as grade 1 in 71 patients (37%), grade 2 in 57 patients (29.7%), grade 3 in 34 patients (17.7%) and grade 4 in 30 (15.6%) patients. The lowest AD level was observed in grade-4 group compared with grade-1 and grade-2 groups ( $p<0.001$ ,  $p=0.009$ , respectively). AD level of grade-3 group was lower than grade-1 and grade-2 group ( $p<0.001$ ,  $p=0.021$ , respectively) (Table). In multiple linear regression analysis, AD was independently associated with age ( $\beta=-0.138$ ,  $p=0.029$ ), hsCRP ( $\beta=-0.209$ ,  $p=0.001$ ) and aortic IMT ( $\beta=-0.432$ ,  $p<0.001$ ).

**Conclusion:** AD is independently associated with age, thoracic aortic IMT and hsCRP. Impaired elasticity index of the aorta might be independent a predictor for the severity of thoracic atherosclerosis.

**Table. Comparison of baseline characteristics in patient groups**

Variables	Grade-1 (n=71)	Grade-2 (n=57)	Grade-3 (n=34)	Grade-4 (n=30)	P
Age (year)	42.5±8.4	45.1±8.2	48.0±7.0	50.5±7.1	<0.001
hsCRP (mg/dl)	0.78±0.63	1.06±0.78	1.28±1.06	1.15±1.0	0.020
AD (cm2 dyn-1 x10-6)	3.59±1.31	2.33±0.89	1.81±0.83	1.72±0.70	<0.001
hsCRP; high sensitive C-reactive protein, AD; aortic distensibility					

## PP-109

**Effects of Smoking and Smokeless Tobacco "Maras powder" use on Cardiac Autonomic Function and Inflammation**

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Smoking is the most preventable risk factor for cardiovascular diseases. A kind of smokeless tobacco known as Maras powder, which is used in the southeastern region of Turkey, causes nicotine dependence. Maras powder is used by the addicts through buccal mucosa instead of cigarette or to give up smoking. Its negative effects on cardiovascular system could not yet fully understood.

Smoking leads to an increased inflammatory activity. The total white blood cell count and its subtypes, such as neutrophil, lymphocyte, and neutrophil/ lymphocyte ratio (NLR), uric acid, gamma-glutamyltransferase (GGT) and C-reactive protein (CRP) can be used as an indicator of systemic inflammation. NLR has been associated with poor outcomes in patients with several cardiovascular diseases. However, there is limited data about the role of NLR in subjects with smokers and Maras powder users.

Cardiac autonomic nervous system (ANS) plays an integral role in the modulation of normal cardiac electrophysiology and regulating cardiac activity. In daily practice, cardiac ANS can be evaluated by several tools like heart rate recovery (HRR), chronotropic response, and QT dynamicity; however, these methodologies has not been used to evaluate ANS in smokers and Maras powder users. The present study was designed to evaluate HRR, chronotropic response, QT dynamicity, and inflammatory status in smokers and Maras powder users.

Study population consisted of 92 male subjects: 32 non-smoker and non Maras powder user healthy volunteers, 32 cigarette smokers, and 30 Maras powder users. Blood samples were taken for total white blood cell count, uric acid, GGT and CRP. The NLR was calculated by dividing neutrophil percentage to lymphocyte. Cardiac ANS indices including HRR and chronotropic response were calculated from exercise stress test parameters. The Tp-e interval and Tp-e/QT ratio were measured from a 12-lead electrocardiogram, and the Tp-e interval corrected for heart rate. These parameters were compared among groups.

Demographic, and laboratory parameters of the groups are shown in Table 1. NLR, uric acid, and CRP were not different among groups ( $p>0.05$ ). The percentage of lymphocytes and GGT levels were weakly but significantly different among groups ( $p<0.05$ ). Data from exercise stress testing and electrocardiographic examination are listed in Table 2. Peak heart rate was significantly lower in Maras powder users ( $p=0.003$ ). The percentage of chronotropic incompetence in Maras powder users was significantly higher than controls ( $p=0.02$ ). Corrected Tp-e interval and Tp-e/QT ratio were not different among groups ( $p>0.05$ ).

Inflammatory status measured by NLR, serum levels of uric acid, and CRP were similar in subjects with healthy volunteers, smokers and Maras powder users. Also, Tp-e interval and Tp-e/QT ratio as indices of ventricular repolarisation were similar in our study population. The use of Maras powder was significantly attenuated heart rate response to exercise.