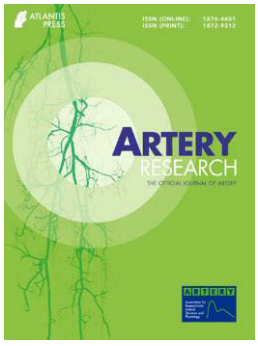

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P171: CARDIOVASCULAR RISK EVALUATION IN BEHCET'S PATIENTS – THE ROLE OF CHRONIC INFLAMMATION IN ARTERIAL STIFFNESS

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wave velocity in the carotid artery by means of ultrasonography. J Hypertens 2009, 27(10):2028-35.
4. T.G. Papaioannou, O. Vardoulis, A. Protogerou, G. Konstantonis, P. P. Sfikakis, C. Stefanadis and N. Stergiopulos. In vivo evaluation of a novel 'diastole-patching' algorithm for the estimation of pulse transit time: advancing the precision in pulse wave velocity measurement. Physiol Meas 2015, 36(1): 149-161.

P169
RELATIONSHIP BETWEEN COMMON CAROTID DISTENSIBILITY/AORTIC STIFFNESS AND LEFT VENTRICULAR MORPHOLOGY AND FUNCTION IN RHEUMATOLOGIC PATIENTS

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Introduction: Arterial stiffness is known to be associated with atherosclerosis, cardiac remodelling and cardiovascular diseases. In recent studies, common carotid artery rigidity was seen to better predict cardiac morphology and function if compared to aortic parameters. The aim of the study was to determine the relation between carotid/aortic stiffness indices and the main echocardiographic measures in patients with rheumatological disease.
Methods: 208 participants were evaluated (57,4 $\pm$ 11,4 yr; males = 36,1%); 65,9% were previously diagnosed with rheumatoid arthritis, 20,2% with psoriatic arthritis and 13,9% with ankylosing spondylitis. In each subjects medical history, use of drugs and glico-metabolic status was assessed. Echocardiography, blood pressure (BP) measurement and carotid ultrasonography were performed. Carotid Distensibility (CD) and Aortic Stiffness (AoS) were measured as indices of arterial stiffness.
Results: Mean Left Ventricular Mass indexed by body surface area (LVM/BSA) and Relative Wall Thickness (RWT) were 98,8 $\pm$ 20,7 g/m^2 and 0,46 $\pm$ 0,06, respectively. In multiple regression analysis, DC was correlated with age (β = 0,325, $p < 0,0001$) and mean BP (β = 0,502, $p < 0,0001$) while AoS was not associated with any anthropometric, anamnestic and vascular parameters. DC has been seen to inversely correlate with LVM/BSA ($r = -0,20$, $p = 0,005$), Intraventricular Septum and Posterior Wall Thickenss; a direct correlation between AoS and left E/e' (a diastolic function indicator) has emerged ($r = 0,191$, $p = 0,007$).
Conclusion: Results are consistent with a possible predictive role of DC assessment in left cardiac hypertrophy and remodelling and a direct link between AoS and left ventricular diastolic function.

P170
A FOREHEAD AND NASAL BRIDGE PULSE OXIMETER COMPARISON MEASUREMENTS ON HEALTHY SUBJECTS

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Photoplethysmography (PPG) is a biophotonic technique which measures blood volume variations in vascular bed and it is well known for its utilization in pulse oximetry for the estimation of arterial blood oxygen saturation. Moving particles within the tissue bed generate rapidly changing absorption caused by the heart beats, while stationary components will cause a relatively constant absorption. The detected light in PPG is therefore composed of an alternating pulsatile component (A) and a constant direct component (B), the both components are utilized for calculating the oxygen saturation estimation. The two LEDs (660 nm & 940 nm) are typical for pulse oximetry. In pulse oximetry, good high-quality RED LED and IR LED generate raw PPG signals (A + B) in both wavelength which are acquired by a single photosensor. Arterial oxygen saturation (SpO2) is estimated from PPG signals acquired from the custom-made nasal bridge PPG sensor and a commercial forehead SpO2 sensor (Medtronic). The SpO2 is calculated based on an empirical formula, SpO2 = 110−R*25, where R = [(A/B)]RED/[(A/B)]IRThe arterial oxygen saturation were 98-100% in healthy young subjects measured from the forehead, whereas elderly people gave 95% - 97%. The use of pulse oximeters increases, and their needs for higher performance. We have measured with the nasal bridge PPG based pulse oximeter and analyzed the test results according to the empirical equations.
Results: Show a rhythmic fluctuation caused, e.g., respiratory activity. The comparison between the commercial device with the custom-made nasal bridge device results were compared because they have different measurement location.

References
1. AkihiroYamamoto et al.: Usefulness of Pulse Oximeter That Can Measure SpO2 to One Digit After Decimal Point, Yonago Acta Medica 2017;60:133−134

P171
CARDIOVASCULAR RISK EVALUATION IN BEHCET'S PATIENTS − THE ROLE OF CHRONIC INFLAMMATION IN ARTERIAL STIFFNESS

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Introduction: Behcet's disease (BD) is a chronic inflammatory syndrome with systemic manifestations. Systemic vasculitis contribute to vascular aging, increasing the arterial stiffness that can be inferred from the Pulse Wave Velocity (PWV) measurement. Carotid ultrasound evaluation allows vascular wall changes detection, as the increase of intima-media thickness (>IMT) and plaques. These alterations increase cardiovascular risk (CVR).
Methods: 49 patients were included. Anthropometric, sociodemographic, laboratorial, comorbidities, medication, peripheral and central blood pressure, Systematic Coronary Risk Evaluation, PWV and carotid ultrasound abnormalities data were evaluated. To understand the role of chronic inflammation in arterial stiffness, comparative analyzes were performed with a control group with CVR factors and with a group of healthy individuals.
Results: The sample consisted mainly of women (61.2%), characterized by 30.6% of arterial hypertension, 32.7% of dyslipidemia, 4.1% of diabetes and 14.3% of obesity. PWV median value was 8.32m/s, with 30.6% PWV > 90th percentile of the normal reference population and 16.3% with target organ lesion. >IMT in the common carotid artery (CCA) and plaques were observed in 10.4% and 41.7%, respectively. In the obtained linear regression model, the variables systolic central blood pressure and >IMT in the ACC showed a statistically significant impact on PWV. In the established comparisons, PWV did not present statistically significant differences. Conclusion: The integrated analysis of the collected data made it possible to requalify the patients in the context of the CVR, allowing the early adoption of control measures. Chronic inflammation associated with BD did not lead to significant differences in arterial stiffness.

References
1. Takeuchi M, Kastner DL, Remmers EF. The immunogenetics of Behçet's disease: A comprehensive review. J Autoimmun. 2015 Nov; 64: 137-48.
2. Gül A. Pathogenesis of Behçet's disease: autoinflammatory features and beyond. Semin Immunopathol 2015 Jul; 37(4): 413-8.
3. Feigenbaum A. Description of Behcet's syndrome in the Hippocratic third book of endemic diseases. Br J Ophthalmol. 1956; 40(6): 355−357.
4. Zeidan MJ, Saadoun D, Garrido M, Klatzmann D, Six A, Cacoub P. Behçet's disease physiopathology: a contemporary review. Auto Immun Highlights. 2016 Dec; 7(1): 4.
5. Alpsoy E. Behçet's disease: A comprehensive review with a focus on epidemiology, etiology and clinical features, and management of mucocutaneous lesions. J Dermatol. 2016 Jun; 43(6): 620-32.
6. Scherrer MAR, Rocha VB, Garcia LC. Behçet's disease: review with emphasis on dermatological aspects. An Bras Dermatol. 2017 Jul-Aug; 92(4): 452-464.
7. Savey L, Resche-Rigon M, Wechsler B, Comarmond C, Piette JC, Cacoub P, Saadoun D. Ethnicity and association with disease manifestations and mortality in Behçet's disease. Orphanet J Rare Dis. 2014 Dez; 27(9): 42.
8. Yazici Y, Yurdakul S, Yazici H. Behçet's Syndrome. Current Rheumatology Reports. 2010 Dez; 12(6): 429-435.
9. Sachetto Z, Mahayri N, Ferraz R, Costallat L, Bertolo M. Behçet's disease in Brazilian patients: demographic and clinical features. Rheumatology International. 2012 Jul; 32(7): 2063-2067.

10. Registo Informático de Doenças Auto-imunes — RIDAI. [visitado a 07/11/2017]; Disponível em: https://www.ridai.org/doenca-de-behcet/02-11-2017
11. Mahr A, Belarbi L, Wechsler B, Jeanneret D, Dhote R, Fain O, Lhote F, Ramanoelina J, Coste J, Guillevin L. Population-Based Prevalence Study of Behçet's Disease. Arthritis and Rheumatism. 2008 Nov; 58(12): 3951—3959.
12. Yazici H, Seyahi E, Yurdakul S. Behçet's syndrome is not so rare: why do we need to know? Arthritis and Rheumatism. 2008 Nov; 58(12): 3640-3.
13. Scherrer M. Doença de Behçet: um enigma oriental. An Bras Dermatol. 1994; 69: 323-6.
14. Al-Mutawa S, Hegab S. Behcet's disease. Clinical and Experimental Medicine. 2004 Dez; 4(3): 103-131
15. Hatemi G, Seyahi E, Fresko I, Talarico R, Hamuryudan V. Behçet's syndrome: a critical digest of the 2014-2015 literature-Review. Clin Exp Rheumatol. 2015 Jul; 33: S3-14
16. Galeone M, Colucci R, D'Erme AM, Moretti S, Lotti T. Potential Infectious Etiology of Behcet's Disease- Review Article. Pathology Research International. 2012 Out: 1-4.
17. Hatemi G, Ozguler Y, Direskeneli H, Mahr A, Gul A, Levi V, Aydin SZ, Mumcu G, Sertel-Berk O, Stevens RM, Yazici H, Merkel PA. Current Status, Goals, and Research Agenda for Outcome Measures Development in Behçet Syndrome: Report from OMERACT 2014. J Rheumatol. 2015 Dez; 42(12): 2436—2441.
18. Kaklamani VG, Vaiopoulos G, Kaklamanis PG. Behçet's Disease. Semin Arthritis Rheum.1998 Fev; 27: 197-217.
19. Kim DH, Cheon JH. Intestinal Behçet's Disease: A True Inflammatory Bowel Disease or Merely an Intestinal Complication of Systemic Vasculitis? Yonsei Med J. 2016 Jan; 57(1): 22-32.
20. Kural-Seyahi E, Fresko I, Seyahi N, Ozyazgan Y, Mat C, Hamuryudan V, et al. The long-term mortality and morbidity of Behçet syndrome: a 2-decade outcome survey of 387 patients followed at a dedicated center. Medicine. 2003 Jan; 82: 60—76.
21. Shen C, LiW, Zhang Y, Li Q, Jiao Y, Zhang T, et al. Outcomes of surgery for patients with Behcet's disease causing aortic pseudoaneurysm: a shift from open surgery to endovascular repair. Clinics. 2016; 71(6): 302-310.
22. International Study Group for Behçet's Disease. Criteria for diagnosis of Behçet's disease. Lancet. 1990 Mai; 335(8697): 1078-80.
23. Saadoun D, Wechsler B. Behçet's disease. Orphanet Journal of Rare Diseases. 2012; 7(1): 20.
24. Davatchi F. Diagnosis/ Classification Criteria for Behcet's Disease. Pathology Research International. 2012; 1-5.
25. Hatemi G, Silman A, Bang D, Bodaghi B, Chamberlain AM, Gul A, et al. Management of Behçet disease: a systematic literature review for the European League Against Rheumatism evidence-based recommendations for the management of Behçet disease. Ann Rheum Dis. 2009; 68: 1528-34.
26. Seyahi E. Behçet's disease: how to diagnose and treat vascular involvement. Best Pract Res Clin Rheumatol. 2016; 30: 279-9.
27. Upala S, Chung Yong W, Sanguankeo A. Increased Arterial Stiffness in Behçet's Disease: a Systematic Review and Meta-Analysis. Korean Circ J. 2017 Jul; 47(4): 477—482.
28. Hingorani AD, Cross J, Kharbanda RK, et al. Acute systemic inflammation impairs endothelium-dependent dilatation in humans. Circulation. 2000;102: 994-9. 3.
29. Klocke R, Cockcroft JR, Taylor GJ, Hall IR, Blake DR. Arterial stiffness and central blood pressure, as determined by pulse wave analysis, in rheumatoid arthritis. Ann Rheum Dis. 2003; 62: 414-8.
30. Kayikçioğlu M, Aksu K, Hasdemir C, et al. Endothelial functions in behçet's disease. Rheumatol Int. 2006; 26: 304-8.
31. Haznedaroglu E, Karaaslan Y, Büyükaşik Y, et al. Selectin adhesion molecules in behçet's disease. Ann Rheum Dis. 2000; 59: 61-3.
32. Oztürk MA, Unverdi S, Oktar SO, et al. Vascular endothelial growth factor and carotid intima-media thickness in patients with behçet's disease. Clin Rheumatol. 2008; 27: 961-6.
33. Kiraz S, Ertenli I, Oztürk MA, Haznedaroğlu IC, Celik I, Calgüneri M. Pathological haemostasis and "prothrombotic state" in behçet's disease. Thromb Res. 2002; 105: 125-33.
34. Rhee MY, Chang HK, Kim SK. Intima-media thickness and arterial stiffness of carotid artery in Korean patients with behçet's disease. J Korean Med Sci. 2007; 22: 387-92.
35. Patel RS, Al Mheid I, Morris AA, et al. Oxidative stress is associated with impaired arterial elasticity. Atherosclerosis. 2011; 218: 90-5.
36. Van Bortel M, Luc et al. Expert consensus document on the measurement of aortics tiffness in daily practice using carotid-femoral pulse wave velocity. Journal of Hypertension. 2011; 30: 445—448.
37. Boutouyrie P, Vermeersch SJ. Determinants of pulse wave velocity in healthy people and in the presence of cardiovascular risk factors: establishing normal and reference values. European Heart Journal. 2010; 31: 2338—2350.
38. Avina-Zubieta JA, Thomas J, Sadatsafavi M, Lehman AJ, Lacaille D. Risk of incident cardiovascular events in patients with rheumatoid arthritis: a metaanalysis of observational studies. Ann Rheum Dis. 2012; 71: 1524—1529.
39. Torres FS, Moreira CM, Vianna FF, Gus M. Intima-media thickness measurement for cardiovascular risk assessment. Rev Bras Hipertens. 2007; 14(3): 167-171.
40. Kanters SDJM, Algra A, van Leeuwen M, et al. Reproducibility of in vivo carotid intima-media thickness measurements: a review. Stroke. 1997; 28: 665-71.
41. Stensland-Bugge E, Bonaa KH, Joakimsen O. Reproducibility of ultrasonographically determined intima-media thickness is dependent on arterial wall thickness. The Tromso Study. Stroke. 1997; 28: 1972-80.
42. O'Leary DH, Polak JF. Intima-media thickness: a tool for atherosclerosis imaging and event prediction. Am J Cardiol. 2002; 90(suppl): 18L-21L.
43. Sol AI, Bots ML, Grobbee DE, et al. Carotid intima-media thickness at different sites: relation to incident myocardial infarction. The Rotterdam Study. Eur Heart J. 2002; 23: 934-40.
44. Roman MJ, Naqvi TZ, Gardin JM, et al. American Society of Echocardiography Report. Clinical application of noninvasive vascular ultrasound in cardiovascular risk stratification: a report from the American Society of Echocardiography and the Society for Vascular Medicine and Biology. Vasc Med. 2006; 11: 201-11.
45. European Society of Cardiology. Intima-media thickness: Appropriate evaluation and proper measurement, described. E-Journal of Cardiology Practice. [visitado a 17/10/2017]; Disponível em:https://www.escardio.org/Journals/E-Journal-of-Cardiology-Practice/Volume-13/Intima-media-thickness-Appropriate-evaluation-and-proper measurement-described.
46. Yolbas S, Gözel N, Dağlı MN, Koca SS, Dönder E. Carotid artery stiffness in Behçet's disease. Eur J Rheumatol. 2017 Jun; 4(2): 122-126.
47 .Yıldırım A, Karakaş MS, Kılınç AY, Altekin RE, Yalçınkaya AS. Evaluation of arterial stiffness and subclinical atherosclerosis in patients with Behçet's disease without cardiovascular involvement. Turk Kardiyol Dern Ars. 2016 Oct; 44(7): 575-581.
48. Oztürk MA, Unverdi S, Oktar SO, Bukan N, Gülbahar O, Ureten K, et al. Vascular endothelial growth factor and carotid intima-media thickness in patients with Behçet's disease. Clin Rheumatol. 2008; 27: 961—6.
49. Messedi M, Frigui M, Ben Mahfoudh K, Feki H, Ben Mahfoudh ST, Mnif J, et al. Intima-media thickness of carotid artery in patients with Behçet's disease. Arch Med Res. 2011; 42: 398—404
50. Hong SN, Park JC, Yoon NS, Lee SR, Kim KH, Hong YJ, et al. Carotid artery intima-media thickness in Behcet's disease patients without significant cardiovascular involvement. Korean J Intern Med. 2008; 23: 87—93. Crossref.
51. Upala S, Yong WC, Sanguankeo A. Increased Arterial Stiffness in Behçet's Disease: a Systematic Review and Meta-Analysis. Korean Circ J. 2017 Jul; 47(4): 477-482.
52. Seyahi E, Ugurlu S, Cumali R, Balci H, Ozdemir O, Melikoglu M, et al. Atherosclerosis in Behçet's Syndrome. Semin Arthritis Rheum. 2008; 38: 1—12. Crossref
53. Rhee MY, Chang HK, Kim SK. Intima-media thickness and arterial stiffness of carotid artery in Korean patients with Behçet's disease. J Korean Med Sci. 2007; 22: 387—92.
54. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. World Health Organization technical report series. 2000; 894: i-xii, 1253.
55. Mancia G, de Backer G, Dominiczak A, et al. 2007 Guidelines for the management of arterial hypertension: the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). J Hypertens. 2007; 25: 1105Y1187.
56. Van Bortel L et al. Expert consensus document on the measurement of aortic stiffness in daily practice using carotid-femoral pulse wave velocity. European Society of Hypertension Working Group on Vascular, S., Function, and European Network for Noninvasive Investigation of Large, A. Journal of Hypertension. 2012; 30(3), 445-448.
57. Direção Geral de Saúde. Norma de Orientação Clínica - Avaliação do Risco Cardiovascular SCORE, Lisboa, 2013 (actualização 2015).
58. Cunha PG, Cotter J, Oliveira P, Vila I, Boutouyrie P, Laurent S, Nilsson PM, Scuteri A, Sousa N. Pulse wave velocity distribution in a cohort study: from arterial stiffness to early vascular aging. Journal of Hypertension.2015; 33(1): 1-8.

59. Yazici H, Tuzun Y, Pazarli H, et al. Influence of age of onset and patient's sex on the prevalence and severity of manifestations of Behcet's syndrome. Ann Rheum Dis. 1984; 43(6): 783—789.
60. Nihal S, Kutlubay EZ, Ucar D, Hatemi I, Uygunoglu U, Siva A, Hatemi G. Behçet's syndrome: providing integrated care. J Multidiscip Healthc. 2017; 10: 309—319.
61. DGS (2016). A saúde dos portugueses 2016. Lisboa: Portugal. Direção-Geral da Saúde. ISSN: 2183-5888.
62. Lopes C et al. (2017). Inquérito alimentar nacional e de atividade física. IAN-AF, 2015-2016. Porto: Universidade do Porto.
63. Instituto Nacional de Estatística. Inquérito Nacional de Saúde. 2014.
64. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Report of the national cholesterol education program (NCEP). Executive Summary of The Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA. 2001; 285: 2486-2497.
65. Malik S, Wong ND, Franklin SS, et al. Impact of the metabolic syndrome on mortality from coronary heart disease, and all cause in United States adults. Circulation. 2004; 110: 1245-1250.
66. Cuspidi C, Sala C, Tadic M, Gherbesi E, Grassi G, Mancia G. Association of metabolic syndrome with carotid thickening and plaque in the general population: A meta-analysis. J Clin Hypertens (Greenwich). 2017; 1-7.
67. Alecu C, Gueguen S, Aubry C, Salvi P, Perret-Guillaume C, Ducrocq X, Vespignani P, Benetos A. Determinants of arterial stiffness in an apparently healthy population over 60 years. Journal of Human Hypertension. 2006; 20: 749—756.
68. Popele NM, Grobbee DE, Bots ML, Asmar R, Topouchian J, Reneman RS, Hoeks A, Kuip D, Hofman A, Witteman J. Association Between Arterial Stiffness and Atherosclerosis. The Rotterdam Study. AHA Journal-Stroke. 2001; 32: 454-460.
69. Sehestedt T, Jeppesenk J, Hansen TW, Wachtell K, Ibsen H, Torp-Pedersen C, Hildebrandt P, Olsen MH. Risk prediction is improved by adding markers of subclinical organ damage to SCORE. Eur Heart J. 2010; 31(7): 883-91.
70. Wang F, Ye P, Luo L, Xiao W, Qi L, Bian S, et al. Association of serum lipids with arterial stiffness in a population-based study in Beijing. Eur J Clin Invest. 2011; 41(9): 929-36.
71. Safar ME, Czernichow SB, Blacher J. Obesity, arterial stiffness, and cardiovascular risk. J Am Soc Nephrol. 2006; 17(4 Suppl 2): S109-11.
72. Mäki-Petäjä KM et al. Rheumatoid Arthritis is associated with increased Aortic Pulse-Wave Velocity which is reduced by Anti—Tumor Necrosis Factor Therapy. Circulation AHA. 2006; 114: 1185-1192.
73. Kürüm T, Yildiz M, Soy M, Ozbay G, Alimgil L, Tüzün B. Arterial distensibility as determined by carotid-femoral pulse wave velocity in patients with behçet's disease. Clin Rheumatol. 2005; 24: 134-8.
74. Caldas CA, Borba EF, Bortolotto LA, Medeiros DM, Bonfa E, Gonçalves CR. Increased arterial stiffness assessed by pulse wave velocity in behçet's disease and its association with the lipid profile. J Eur Acad Dermatol Venereol. 2013; 27: 454-9.
75. Chang HK, Kim SK, Lee SS, Rhee MY. Arterial stiffness in behçet's disease: increased regional pulse wave velocity values. Ann Rheum Dis. 2006; 65: 415-6.
76. Yilmaz S, Celik G, Esmen SE. Assessment of arterial stiffness in patients with inactive and active behçet's disease. Scand J Rheumatol. 2014; 43: 63-9.

P172

ROLE OF ADIPOSE TISSUE AND SKELETAL MUSCLE IN MACROVASCULAR ATHEROSCLEROTIC OCCLUSIVE DISEASE-PERIPHERAL ARTERIAL DISEASE AND CAROTID ARTERY DISEASE

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Purpose/Background/Objective: Carotid artery disease (CAD) and peripheral arterial disease (PAD) are non-cardiac manifestations of atherosclerotic disease, which are less extensively studied. Presently, adipose tissue (AT) and skeletal muscle (SM) are considered endocrine organs, producing cytokines with vascular effects 1,2,3,4,5,6,7. Main objective is to clarify the role of AT and SM in several stages of atherosclerotic occlusive disease (CAD and PAD), and its connection with arteriosclerotic changes in other territories. Secondary objective: to study the evolution of these parameters after revascularization and after carotid endarterectomy.
Methods: Study Groups (Fig 1): control- without macrovascular atherosclerotic disease eligible for elective varicose veins surgery with inguinal approach. Study group 1- with PAD, confirmed by ankle-brachial index, with or without indication to revascularization. Study group 2- with CAD with or without indication to endarterectomy. We will determine the quantity, endocrine functionand histologyof SM and AT (in groups submitted to surgery). The groups will be evaluated at admission, 3 and 6 months (Fig 2).
Expected Results: The quantity of AT compartments (visceral, subcutaneous and perivascular) and SM will be determined with transvers abdominal CT scan at the level of 3th vertebra. The endocrine function will be evaluated measuring the myokines and adipokines in blood sample. During the surgery we will collect samples of AT (visceral, subcutaneous and perivascular), SM and artery for histology. We will determine the type, number and size of present cell and vascularization. Additional Central Hemodynamicdata will be obtained from carotid Doppler ultrasound, carotid femoral-pulse wave velocity; peripheral central pulse pressure; anthropometric and muscle mass measurements will be performed.
Conclusion: We hope to correlate the atherosclerotic and arteriosclerotic phenotypes with SM and AT characteristics, as well as indexes of sarcopenia.

References

1. Jia G, Aroor AR, Soers JR. The role of mineralocorticoid receptor signaling in the cross-talk between adipose tissue and the vascular wall. Cardiovasc Res. 2017 Jul 1;113(9):1055-1063.
2. Alexandersen P, Tankó LB, Bagger YZ et al. Associations between aortic calcification and components of body composition in elderly Men. Obesity 2006;14(9): 1571-8.
3. Akoumianakis I, Antoniades C. The interplay between adipose tissue and the cardiovascular system: is fat always bad? Cardiovasc Res. 2017 Jul 1;113(9):999-1008.
4. Lau WB, Ohashi K, Wang Y, Ogawa H, Murohara T et al. Role of adipokines in cardiovascular disease. Circ J. Jun 23;81(7):920-928.
5. Cao ZFH, Cohen ESP. Role of perivascular adipose tissue in vascular physiology and pathology. Hypertension. 2017 May;69(5):770-777.
6 .Guzik TJ, Skiba DS, Touyz RM, Harrison DG. The role of infiltrating immune cells in dysfunctional adipose tissue. Cardiovas Res. 2017 Jul 1;113(9):1009-1023.
7. Kaysen GA. Association between Inflammation and Malnutrition as Risk Factors of Cardiovascular Disease. Blood Purif 2006; 24:51—55.