

Discipline MCP5874 **Diabetes, Inflammation and Atherosclerosis: Critical Analysis of Basic and Clinical Research****Concentration area:** 5131**Creation:** 20/01/2022**Activation:** 20/01/2022**Credits:** 2**Workload:**

Theory (weekly)	Practice (weekly)	Study (weekly)	Duration	Total
10	10	10	1 weeks	30 hours

Professors:

Carlos Vicente Serrano Junior

Eduardo Gomes Lima

Objectives:

1) To contribute to the understanding of pathophysiology of atherosclerosis related to diabetes and potential therapeutic targets, biomarkers and new drugs. 2) To promote conditions of developing of critical interpretation of main trials in this field, including basic research and clinical trials. 3) Through international collaboration, we sought to stimulate high quality research with appropriated scientific methodology designed to answer contemporary questions in this field.

Rationale:

Interaction between diabetes, inflammation and atherosclerosis has been a field of several trials, including mechanistic and clinical ones. Once diabetes promotes accelerated atherosclerosis with higher rates of cardiovascular events among those with both conditions, understanding of pathophysiology and therapeutic options could impact the prognosis of this condition. Number of publications indexed in PUBMED in this set has increased since 10 years ago, with almost 800 in 2005 and more than 1,400 in 2015. Some anti-diabetic drugs acting in different metabolic pathways have been developed in the last 10 years and recently showed reduction of cardiovascular events. Otherwise, best treatment for CAD among diabetics is motive of debate and some trials were designed to study this specific condition.

Content:

Adipokines, diabetes and atherosclerosis Lipids in diabetes Anti-diabetic drugs and CAD: incretin-based therapies and SGLT-2 inhibitors Biomarkers in diabetes-related CAD: troponins, LPA, LPPLA-2, us-CPR. Subclinical atherosclerosis and diabetes: screening and stratification. Chronic Kidney Disease, Diabetes and CAD OMT for diabetes-related CAD Interventional procedures for CAD and diabetes: PCI versus CABG

Type of Assessment:

Presentation of seminars and discussion with professors and distinguished specialists in this field comprising main trials published in high impact journals. 2) Development of a scientific project related to this field with rationale, appropriate methodology, and funding resources.

Theoretical 1) Participation in discussions and assiduity in classes with presentations provided by professors and international collaborators.

Notes/Remarks:

Invited Professors: Michael Farkouh (University of Toronto) and James de Lemos (UT Southwestern Medical Center) Minimum number of students: 5 Maximum number of students: 20

Bibliography:

Niccoli G, Giubilato S, Di Vito L, et al. Severity of coronary atherosclerosis in patients with a first acute coronary event: a diabetes paradox. *Eur Heart J*. Mar 2013;34(10):729-741. 2. Wong ND, Zhao Y, Patel R, et al. Cardiovascular Risk Factor Targets and Cardiovascular Disease Event Risk in Diabetes: A Pooling Project of the Atherosclerosis Risk in Communities Study, Multi-Ethnic Study of Atherosclerosis, and Jackson Heart Study. *Diabetes Care*. May 2016;39(5):668-676. 3. Major AS, Harrison DG. What fans the fire: insights into mechanisms of inflammation in atherosclerosis and diabetes mellitus. *Circulation*. Dec 20 2011;124(25):2809-2811. 4. Luft VC, Schmidt MI, Pankow JS, et al. Dipeptidyl peptidase IV and incident diabetes: the Atherosclerosis Risk in Communities (ARIC) study. *Diabetes Care*. May 2010;33(5):1109-1111. 5. Bertoni AG, Burke GL, Owusu JA, et al. Inflammation and the incidence of type 2 diabetes: the Multi-Ethnic Study of Atherosclerosis (MESA). *Diabetes Care*. Apr 2010;33(4):804-810. 6. Turrini F, Messori R, Giovanardi P, et al. Screening asymptomatic patients with diabetes for unknown coronary artery disease: does it reduce risk? An open-label randomized trial comparing a strategy based on exercise testing aimed at revascularization with management based on pharmacological/behavioural treatment of traditional risk factors. DADDY-D Trial (Does coronary Atherosclerosis Deserve to be Diagnosed and treated early in Diabetics?). *Trials*. Dec 23 2009;10:119. 7. Mancini GB, Farkouh ME, Brooks MM, et al. Medical Treatment and Revascularization Options in Patients With Type 2 Diabetes and Coronary Disease. *J Am Coll Cardiol*. Sep 6 2016;68(10):985-995. 8. Kang SH, Park GM, Lee SW, et al. Long-Term Prognostic Value of Coronary CT Angiography in Asymptomatic Type 2 Diabetes Mellitus. *JACC Cardiovasc Imaging*. Nov 2016;9(11):1292-1300. 9. Baber U, Farkouh ME, Arbel Y, et al. Comparative efficacy of coronary artery bypass surgery vs. percutaneous coronary intervention in patients with diabetes and multivessel coronary artery disease with or without chronic kidney disease. *Eur Heart J*. Aug 29 2016. 10. Duivenvoorden R, Mani V, Woodward M, et al. Relationship of serum inflammatory biomarkers with plaque inflammation assessed by FDG PET/CT: the dal-PLAQUE study. *JACC Cardiovasc Imaging*. Oct 2013;6(10):1087-1094. 11. Farkouh ME, Domanski M, Fuster V. Revascularization strategies in patients with diabetes. *N Engl J Med*. Apr 11 2013;368(15):1455-1456. 12. Peri-Okonny PA, Ayers C, Maalouf N, et al. Adiponectin protects against incident hypertension independent of body fat distribution: observations from the Dallas Heart Study. *Diabetes Metab Res Rev*. Jul 25 2016. 13. Salahuddin UI, Pandey A, Ayers CR, et al. Effect of treatment with rosiglitazone on high-sensitivity cardiac troponin levels among patients with type 2 diabetes mellitus. *Diab Vasc Dis Res*. Mar 2016;13(2):113-118. 14. de Lemos JA. Increasingly sensitive assays for cardiac troponins: a review. *JAMA*. Jun 5 2013;309(21):2262-2269. 15. Neeland IJ, Turer AT, Ayers CR, et al. Dysfunctional adiposity and the risk of prediabetes and type 2 diabetes in obese adults. *JAMA*. Sep 19 2012;308(11):1150-1159. 16. Omland T, de Lemos JA, Sabatine MS, et al. A sensitive cardiac troponin T assay in stable coronary artery disease. *N Engl J Med*. Dec 24 2009;361(26):2538-2547. 17. Lima EG, Hueb W, Gersh BJ, et al. Impact of Chronic Kidney Disease on Long-Term Outcomes in Type 2 Diabetic Patients With Coronary Artery Disease on Surgical, Angioplasty, or Medical Treatment. *Ann Thorac Surg*. May 2016;101(5):1735-1744. 18. Rezende PC, Rahmi RM, Uchida AH, et al. Type 2 diabetes mellitus and myocardial ischemic preconditioning in symptomatic coronary artery disease patients. *Cardiovasc Diabetol*. May 30 2015;14:66. 19. Lima EG, Hueb W, Garcia RM, et al. Impact of diabetes on 10-year outcomes of patients with multivessel coronary artery disease in the Medicine, Angioplasty, or Surgery Study II (MASS II) trial. *Am Heart J*. Aug 2013;166(2):250-257. 20. Rahmi RM, Uchida AH, Rezende PC, et al. Effect of hypoglycemic agents on ischemic preconditioning in patients with type 2 diabetes and symptomatic coronary artery disease. *Diabetes Care*. Jun 2013;36(6):1654-1659. 21. Paiva MS, Serrano CV, Jr., Nicolau JC, et al. Differences in the inflammatory response between patients with and those without diabetes mellitus after coronary stenting. *J Interv Cardiol*. Oct 2008;21(5):403-409. 22. Nicolau JC, Serrano CV, Jr., Giraldez RR, et al. In patients with acute myocardial infarction, the impact of hyperglycemia as a risk factor for mortality is not homogeneous across age-groups. *Diabetes Care*. Jan 2012;35(1):150-152. 23. Frye RL, August P, Brooks MM, et al. A randomized trial of therapies

for type 2 diabetes and coronary artery disease. N Engl J Med. Jun 11 2009;360(24):2503-2515.

Class type:

Não-Presencial

Additional class type information:

- A porcentagem da disciplina que ocorrerá no sistema não presencial (1- 100%). A disciplina será 100% on-line.
- Detalhamento das atividades que serão presenciais e das que serão desenvolvidas via remota, com discriminação do tempo de atividade contínua online. Uma vez que trata-se de disciplina com atividades teóricas e discussão de metodologia científica, mediante apresentação de seminários baseados em artigos científicos recentes, todas as atividades serão desenvolvidas por via remota, sendo as 10h de atividades teóricas e as 10h de atividades práticas (seminários) distribuídas durante a semana na forma de atividades contínuas diárias de 4h de duração.
- Especificação se as aulas, quando online, serão síncronas ou assíncronas. As aulas serão síncronas, em tempo real, com a participação dos professores e alunos durante todo o período de atividade, não havendo atividades gravadas.
- Descrição do tipo de material e/ou conteúdo que será disponibilizado para o aluno e a plataforma que será utilizada. Antes de início da disciplina será disponibilizada um cronograma contendo a programação de aulas teóricas, bem como as referências dos artigos científicos a serem discutidos durante a semana com os respectivos alunos responsáveis. A lista de artigos é renovada anualmente, contemplando artigos de pesquisa clínica e básica publicados no ano vigente. A plataforma utilizada será o Zoom.
- Definição sobre a presença na Universidade e, quando necessária, discriminar quem deverá estar presente (professora/professor; aluna/aluno; ambos). Um dos professores responsáveis pela disciplina estará presente fisicamente na Universidade, coordenando/ moderando as atividades on-line em um computador da instituição. Aos professores convidados para ministração de aulas teóricas e aos alunos, há a possibilidade de participação utilizando uma das salas da instituição ou remotamente sem computador pessoal.
- Descrição dos tipos e da frequência de interação entre aluna/aluno e professora/professor (somente durante as aulas; fora do período das aulas; horários; por chat/e-mail/fóruns ou outro). Antes da disciplina, as orientações gerais e interações se dará por e-mail ou por telefone através do ramal específico da secretaria da Unidade de Aterosclerose. Durante a disciplina a interação se dará diretamente por vídeo ou através de chat específico no Zoom em momentos estratégicos para dirimir dúvidas: antes do início das atividades, no intervalo entre as atividades, ou ao final das atividades do dia. Durante a semana de aulas, porém fora do período das mesmas, as interações se darão por e-mail ou telefone. A forma de controle da frequência nas aulas. A frequência será computada mediante participação do aluno logado no sistema e lista específica distribuída no decorrer da aula via chat.
- Informação sobre a obrigatoriedade ou não de disponibilidade de câmera e áudio (microfone) por parte dos alunos. Haverá obrigatoriedade de uso de câmera e áudio durante todo o curso por parte dos alunos, salvo exceções justificadas.
- A forma de avaliação da aprendizagem (presencial/remota). Apresentação do seminário referente a artigo científico fornecido - 50% Contribuição na análise crítica dos demais artigos apresentados pelo grupo - 30% Desenvolvimento de projeto de pesquisa utilizando metodologia adequada e justificativa apropriada, ao final da disciplina - 20%