Discipline MCP5892
Refractory Angina as a Platform for the Development of New Therapeutic Options in Translational Cardiology

Concentration area: 5131

Creation: 11/02/2021

Activation: 11/02/2021

Credits: 2

Workload:

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

Professor:

Luís Henrique Wolff Gowdak

Objectives:

OBJECTIVE: This course aims to expose the post-graduate student to a research model in Translational Cardiology based on a clinically challenging condition such as REFRACTORY ANGINA. The opportunity to critically discuss new diagnostic approaches and therapeutic innovations in these patients will be offered, sharing the experience of the Center for Studies and Research in Refractory Angina (NEPAR) linked to the Laboratory of Genetics and Molecular Cardiology. The student will have the chance, based on a clinical problem presented from its pathophysiology, to propose diagnostic strategies and therapeutic innovations. The Discipline will seek to demonstrate the importance of moving between areas of Basic Research (Molecular and Cellular Biology) and Clinical Research, a practical example of Translational Cardiology. In this context, great emphasis will be given to the interdisciplinarity of the theme, addressing a) basic concepts about the regulation of vascular growth; b) animal models of chronic ischemia and techniques to stimulate the growth of new blood vessels; c) new drugs; d) strategies to increase myocardial perfusion, such as the use of stem cells, shockwave therapy, external counter-pulsation and cardiovascular rehabilitation. In parallel, we will discuss tools for accurate quantification of myocardial ischemia. At the end of the course, students are expected to be multiplier agents of this research model on issues relevant to their area of interest in their institutions.

Rationale:

RATIONALE: Despite fundamental advances in medical treatment and revascularization procedures (percutaneous and surgical), many patients with chronic coronary syndrome have debilitating symptoms that are unresponsive to conventional treatment due to disease progression (chronic arterial occlusion, diffuse involvement of the distal arterial bed, or restenosis post-angioplasty), making further attempts at myocardial revascularization impossible, a condition known as refractory angina. The estimated annual incidence of patients with refractory angina is between 50,000 and 200,000 new cases in the United States and between 30,000 and 100,000 in Europe, results of increased life expectancy and reduced mortality in patients with chronic coronary syndrome. Currently, all major international cardiology societies such as the American Heart Association and the American College of Cardiology, the Canadian Cardiovascular Society and the European Society of Cardiology recognize the need to seek new therapeutic strategies for this growing population of patients in whom conventional treatment has been of limited effectiveness for optimal symptom control. For these patients, the main objective of treatment is to improve quality of life, increase

exercise tolerance and decrease the need for hospitalization and diagnostic or therapeutic procedures. The Center for Studies and Research in Refractory Angina, unique in the country, established a clinical program for these patients seeking the incorporation of new drugs, new therapeutic strategies such as the use of stem cells during incomplete myocardial revascularization surgery, revascularization by shockwave therapy and cardiovascular rehabilitation. For the post-graduate student, it is a valuable opportunity to understand the concept of Translational Cardiology applied from a challenging clinical problem (such as the patient with Refractory Angina).

Content:

CONTENT: Vascular growth factors and angiogenesis. Basic concepts in gene therapy and cell therapy. Animal models of myocardial ischemia. Regulation of the growth of coronary collateral circulation. Non-invasive and invasive quantitative assessment of myocardial perfusion. Refractory angina: definition, epidemiology, physiopathology, and diagnosis. New drugs for symptom control: trimetazidine, ivabradine, ranolazine and allopurinol. Regenerative Medicine - fundamental concepts and clinical applications. Critical analysis of innovative strategies in the treatment of patients with refractory angina. Cardiovascular rehabilitation in the patient with refractory angina. Clinical research in Refractory Angina as a research model in Translational Cardiology.

Type of Assessment:

Students will be evaluated for their attendance, interest and participation during classes and discussions stimulated by the teachers involved in the discipline

Notes/Remarks:

NOTE: Minimum number of students: 5 (five) Maximum number of students: 20 (twenty)

Bibliography:

Refractory angina. Heart and Metabolism 2017;72:1-51. Gowdak LHW, Krieger JE. Fatores de crescimento vascular, células progenitoras e angiogênese. In: Endotélio e Doenças Cardiovasculares: Biologia Vascular e Síndromes Clínicas. Editora Atheneu: Rio de Janeiro 2016. Págs. 57-71. Gowdak LHW, Krieger JE. Regeneração tecidual no sistema cardiovascular e células-tronco. In: Medicina Cardiovascular: Reduzindo o Impacto das Doenças. Editora Atheneu: São Paulo 2016. Págs. 141-151. Makowski M et al. Refractory angina – Unsolved problem. Cardiol Clin. 2020;38(4):629-637. Gallone G et al. Refractory angina: From pathophysiology to new therapeutic nonpharmacological technologies. JACC Cardiovasc Interv. 2020;13(1):1-19. Cheng K et al. New advances in the management of refractory angina pectoris. Eur Cardiol. 2018;13(1):70-79. Rakhimov K et al. Non-pharmacological Treatment of Refractory Angina and Microvascular Angina. Biomedicines. 2020;8(8):285. Bassetti B et al. Cell therapy for refractory angina: A reappraisal. Stem Cells Int. 2017;2017:5648690. Ferrari R et al. Expert consensus document: A 'diamond' approach to personalized treatment of angina. Nat Rev Cardiol. 2018;15(2):120-132. Seiler C et al. The human coronary collateral circulation: development and clinical importance. Eur Heart J. 2013;34(34):2674-82.

Class type:

Presencial