Discipline **MCP5869**  
Right Ventricle and Pulmonary Circulation, from Molecular Bases to Clinical Management

**Subject area:** 5131  
**Created:** 20/10/2016  
**Active since:** 20/10/2016  
**Number of credits:** 2  

**Hours:**

<table>
<thead>
<tr>
<th>Theoretical (per week)</th>
<th>Practical (per week)</th>
<th>Self-study (per week)</th>
<th>Duration</th>
<th>Total</th>
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<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>1 week</td>
<td>30 hours</td>
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**Faculty Member Responsible:**  
Antonio Augusto Barbosa Lopes

**Objectives:**

The right ventricle and pulmonary circulation ceased to be area-specific subjects, and became subjects of interest of various specialties and multiprofessional scope. In humans, both are affected in diseases such as heart disease of diverse nature, diseases of the connective tissue, thrombophilia and other thromboembolic conditions, respiratory and pulmonary diseases, parasitoses and the inadvertent use of certain drugs, among others. All these pathological conditions may cause progressive remodeling in the pulmonary vascular tree, with evolution to advanced incapacitation and death due to cardiac failure (notably of the right ventricle). With the advent of specific therapeutic resources for the management of the so-called PULMONARY HYPERTENSION, diverse training professionals, including scientists, as well as health professionals who manage bedside management, became interested in and dedicated to the study of abnormalities that affect the pulmonary circulation and the right ventricle. In the vascular domain emphasis is given to cell and molecular biology studies, including vascular tone control (potassium channels and mitochondrial biology), microvascular dysfunction (involving endothelium, platelets, leukocytes and other circulating elements), smooth muscle cell biopathology and its interaction with matrix, inflammation and thrombosis, as well as several signaling pathways that represent potential targets for therapeutic interventions. In the ventricular environment stand out the studies involving "molecular signatures" that define which hearts will evolve with compensatory hypertrophy, and which will go towards the maladaptation with extensive fibrosis. Regarding the right ventricle in practical situations at the bedside, nowadays it is known that it is not possible to understand its evolution through the isolated measurement of ventricular function indexes and circulating natriuretic peptides. Only models of coupling and decoupling between the right ventricle and the pulmonary circulation can bring realistic rates of cardiopulmonary dynamics. The central objective of the discipline is, therefore, to integrate basic mechanisms to the processes of adaptation and mismatch between the right ventricle and the pulmonary circulation within the clinical practice.

**Background:**
Originally, the discipline was designed to study the right ventricle and pulmonary circulation in congenital heart disease. However, the prevalence of left heart diseases and involvement of the pulmonary circulation in a large number of systemic conditions extends the list of multiprofessional elements interested in the subject. Thus, the discipline intends to achieve, without evidently exhausting the subject, professionals interested in basic mechanisms, those who deal with the problem in an essentially clinical scope, and those who intend to integrate these two dimensions. The success of the discipline should be proportional to the diversity of professionals and interests in each edition.

Content:

1) The past and the present in the evaluation of the right ventricle and its coupling to the pulmonary circulation: echocardiography, magnetic resonance imaging, pressure-volume curves and metabolism studies with radiotracer. 2) Models of adaptation and right ventricular maladaptation. Is there a "molecular signature" of the ventricle doomed to failure? Possibilities of pharmacological intervention. 3) Pulmonary vascular biopathology, biomarkers and prognostic markers. What can be seen through measurable measurements in clinical practice. Application of translational research concepts. 4) State of the art in the pharmacological management of pulmonary hypertension. Possibilities and limitations in privileged communities and in developing areas. How the academy, the private sector (industry) and government agencies operate. 5) How to evaluate the effectiveness of therapeutic strategies: from laboratory parameters to health quality of life. Perspectives regarding the programmed physical activity in patients with cardiopulmonary hemodynamic dysfunction.

Assessment method:

Performance in seminars and participation and involvement in discussions of the topics presented by lecturers and peers.

Observation:

Number of students: Minimum = 05 (five) Maximum = 15 (fifteen)

Bibliography:


Chin KM, Coghlan G. Characterizing the right ventricle: advancing our knowledge. Am J Cardiol 2012;110(6 Suppl):3S-8S.


Fares WH, Ford HJ, Ghio AJ, Aris RM. Safety and feasibility of obtaining wedged pulmonary


van de Veerdonk MC, Kind T, Marcus JT, Mauritz GJ, Heymans MW, Bogaard HJ, Boonstra A,

Idiomas ministrados:
Português