2016 Dr. Pedro Cossio Foundation Award

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Going on with the tradition installed many years ago by Dr. Pedro Cossio, we shall make brief comments about the works selected by the Scientific Committee during the 42nd Argentine Congress of Cardiology to contend for the 2016 Dr. Pedro Cossio Foundation Award. Four of them met the necessary regulatory requirements to contend for the thirtieth edition of the award. The winning work was:

- *"Lipoprotein a: Extreme Elevations and Genetic Polymorphisms, Association with Cardiac and Vascular Lesions Evaluated by Computed Tomography"*, by Pablo Corral, Marcelo Rodríguez, Silvina Quintana, Diego Quirós and Augusto Sigismondi.

Lipoprotein a or Lp(a) has a complex structure, that consists of a cholesterol-rich LDL particle with one molecule of apolipoprotein B100 and an additional glycoprotein, apolipoprotein(a), attached via a disulfide bond. Apolipoprotein(a) possesses structural homology with plasminogen, causing competitive inhibition of fibrinolysis. Thus, Lp(a) has prothrombotic and antifibrinolytic effects. In addition, Lp(a) and Apo B100 can easily cross the endothelium and contribute to the formation and development of atherosclerotic plaques. This double mechanism makes Lp(a) a novel risk factor for atherosclerotic disease, particularly in the coronary arteries.

A large population-based study conducted in Copenhagen showed that the population 20th percentile had Lp(a) concentrations >50 mg/dL. Elevated Lp(a) levels were associated with higher risk of myocardial infarction, (1) and extreme elevation of Lp(a) levels improves myocardial infarction risk prediction. (2)

This group of investigators from Mar del Plata identified 40 patients with extreme Lp(a) levels >100 mg/dL. Mean age was 52.9 years, 37% were women and 12 patients were receiving secondary prevention therapies. Mean Lp(a) level was 170.4 mg/dL. The screening criteria were: early ischemic heart disease (women <65 years and men <55 years), family history of early cardiovascular disease or elevated Lp(a) levels or recurrent cardiovascular disease despite maximal treatment with statins. The study had two objectives: firstly, to analyze the presence of calcifications in the heart valves, coronary arteries and aorta using 16-detector row multislice computed tomography. Due to the important genetic component of this lipoprotein, the second aim was to analyze three genetic polymorphisms associated with Lp(a) levels. Thirty patients (75%) presented at least one calcification: 49% in the thoracic aorta, 35% in the coronary arteries and 16% in the aortic root. Among these 30 cases, 27 (90%) had at least one of the genetic abnormalities analyzed. None of the patients without calcifications presented genetic abnormalities. These results led to a new categorization of these patients and modification of preventive therapies, particularly the indication of statins and aspirin.

This work represents an attractive original contribution in our setting, providing associations between genetics and imaging studies in a significant group of patients with an infrequent high risk condition. One of the most important limitations of this study is the lack of a control group to confirm the real importance of the findings published. In addition, the current guidelines do not recommend systematic screening of Lp(a) levels due lack of effective therapies for the management of this condition, (3) and only recommend Lp(a) assessment in special situations as those described as screening criteria in the present study.

The other works were:

- *"Temporal Variation of Smoking Habits among Argentine physicians. Comparison between the TAMARA I (2004) and II (2013) Studies"*, by Horacio M. Zylbersztejn, Lorenzo M. Lobo, Walter Masson, Graciela Molinero, Adriana Ángel, Andrés Mulassi, Mariano A. Giorgi and Mauro A. García.

The TAMARA I trial in 2004 (n=6497), (4) and the TAMARA II trial in 2013 (n=3033) (5) provided realistic scenarios of the smoking habits among physicians in Argentina and their attitudes toward their patients who smoke. The surveys consisted on structured self-administered questionnaires answered by physicians of different specialties nationwide. Dur-

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ing that period, the prevalence of physicians who smoked was reduced by one-third: from 30.0% to 19.7% (p < 0.01). The trial reported that physicians were more likely to provide counseling to quit smoking in each medical visit and to be trained in tobacco cessation counseling.

Comparing the First (2005) with the Third (2013) National Survey of Risk Factors, smoking habits significantly decreased from 29.7% to 25.1%. Thus, the reduction of tobacco use was greater among physicians than in the general population. These trends are consistent with the observations reported in many places worldwide and are stronger despite the intense marketing campaigns of the tobacco companies. During the decade elapsed between both TAMARA trials, the National Ministry of Health of our country created the National Tobacco Control Program, and the National Tobacco Control Law Nº 26687 was enacted with measures that contributed to these results.

Depending on the way one looks at the results of this study, one may be optimistic or pessimistic. The good news is the persistent reduction in tobacco use. The bad news is that one out of five physicians in Argentina still smokes.

- *"Temporal Comparison of two Multicenter Registries of ST-Segment Elevation Myocardial Infarction in Argentina: the 2011 SCAR Registry and the 2015 ARGEN-IAM-ST Registry"*, by Claudio César Higa, Heraldo D'Imperio, Patricia Blanco, Adrián Charask, Hernán Cohen Arazi, Fedor Novo, Eduardo Perna and Juan Gagliardi.

For more than 25 years, the Argentine Society of Cardiology, through its Research Area and Council on Cardiovascular Emergency Care, has been performing surveys about the demographics, clinical characteristics, delay in care delivery, use of diagnostic and therapeutic resources and in-hospital outcomes of acute myocardial infarction in a significant number of coronary care units nationwide. We should emphasize that these surveys do not accurately reflect the reality of the national situation, as the participating centers are institutions selected for having certain characteristics, as medical residency programs and high complexity medical services. In the first surveys during the nineties, 73.7% of the patients with ST-segment elevation myocardial infarction (STEMI) arrived within 6 hours from symptoms onset, mean symptoms-to-door time was 180 minutes (90-380), 62% received reperfusion therapy (thrombolysis 46%, angioplasty 16%) and in-hospital mortality was 10.1%. (6)

The aim of the present study was to compare the results observed in the centers participating in two important studies: a) the SCAR registry performed in 2011 and organized by the Research Area and the Council on Cardiovascular Emergency Care of the SAC, which included all the acute coronary syndromes (for the purpose of the present analysis, only STEMI

patients were considered), and b) the ARGEN-IAM-ST registry, performed in 2015 and conducted by the National Ministry of Health, the Argentine Society of Cardiology and the Argentine Federation of Cardiology, which analyzed only STEMI patients. The database consisted of 676 patients from the 54 centers that participated in both registries. There were differences in the prevalence of risk factors. Despite a reduction in the prevalence of smoking habits in the general population of the country, tobacco use was greater in the ARGEN-IAM-ST registry. Mean time from symptoms onset to admission was similar (SCAR: 129 minutes vs. ARGEN-IAM-ST: 136 minutes, p=ns). The use of primary angioplasty increased and thrombolysis decreased in the ARGEN-IAM-ST registry, as occurs in all global registries. Other differences to mention are the lower indication of glycoprotein IIb/IIIa inhibitors, antiplatelet therapy, intravenous nitroglycerin, beta blockers and ACEIs in the ARGEN-IAM-ST registry. Despite these differences, the incidence of post-infarction angina, mechanical complications and cardiogenic shock was lower, but mortality was somehow greater (SCAR: 6.3% vs. ARGEN-IAM-ST: 8.6%, p=ns). These mortality rates are slightly higher than those reported by international guidelines, ranging between 5% and 6%. (7) This presentation provides interesting additional information to the chain of surveys conducted throughout almost 3 decades; however, the short time interval elapsed between both studies and the small number of patients analyzed do not allow drawing more solid conclusions.

- *"Prognostic Value of the Leuko-Glycemic Index Following Cardiac Surgery"*, by Leonardo Adrián Seoane, Yevgeniy Korolov, Mariano Vrancic, Mariano Camporrotondo, Fernando Piccinini, Alfredo Hirschson Prado, Daniel Navia and Mariano Benzadón.

Leukocytosis and hyperglycemia as markers of inflammatory activity and metabolic abnormality, respectively, are associated with higher risk in several critical medical conditions, as sepsis, stroke or acute coronary events. The combination of both markers can be considered a prognostic index (leuko-glycemic index or LGI).

The authors of this study analyzed 2,743 patients undergoing surgery at the Instituto Cardiovascular de Buenos Aires between 2010 and 2015. The population was subdivided according to LGI quartiles obtained immediately after cardiac surgery. The primary endpoint was a composite of in-hospital mortality (IHM) and low cardiac output syndrome (LCOS). The secondary endpoints included IMH, LCOS, atrial fibrillation, acute kidney failure, need for dialysis (during hospitalization) and length of hospital stay. The primary endpoint showed a significant increase among the LGI quartiles: 5.4%: 7.1%, 7.7% and 10.1% (p=0.0256). The LGI predicted higher incidence of LCOS, acute kidney failure and need for dialysis, but

not for the rest of the secondary endpoints. Despite LGI was associated with a significantly greater prevalence of history of hypertension and myocardial infarction, the authors did not report adjusted results for these variables.

In 2014, this *Journal* published the LGI value in patients with myocardial infarction of the SCAR trial. (8) That study was also candidate for the Dr. Pedro Cossio Foundation Award during the 2013 Argentine Congress of Cardiology. At that time, we pointed out that white blood cell count and sugar levels combine a marker of inflammation with a metabolic marker that correlate with unfavorable outcomes. These classic determinations are available, easy to measure and cheap, they have the possibility of being massively used in low complexity centers, and their combination can identify patients with worse outcome. The question we may pose is their real usefulness in the scenario of cardiovascular surgery, which is usually performed in high complexity centers with possibilities of using markers with higher sensitivity and accuracy to predict LCOS, hypoperfusion and adverse outcome, as the direct determination of cardiac index, venous oxygen saturation or lactate. (9)

The jury of the 2016 Foundation Dr. Pedro Cossio Award was formed by Dr. Ricardo Iglesias and Dr. Daniel Piñeiro, to whom I am grateful for their skilled and responsible participation. The Dr. Pedro Cossio Foundation is pleased to announce that it plans to grant the thirty-first edition of the Award during the next Argentine Congress of Cardiology.

CONFLICTS OF INTEREST
None declared.

(See authors' conflicts of interest forms on the website/Supplementary material).

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