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Atherosclerosis newsletter

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"Call for Original Research Papers on Lp(a)"

With the advent of specific Lp(a)-lowering therapies, the Lp(a) field is experiencing a sense of excitement and optimism. Therefore, *Atherosclerosis* as the journal of the European Atherosclerosis Society (EAS) is **calling for the submission of Original Research Papers** on various topics in Lp(a), which contribute **novel findings** to the field. These manuscripts will undergo a regular review process and in case of acceptance will go online within the usual time of processing.

The submitted Original Research Articles will be handled by Marlys L. Koschinsky as Guest Editor and Florian Kronenberg as Co-Editor of *Atherosclerosis*. They will decide on the peer reviewers of the submitted articles. If a manuscript is accepted for publication, these Original Research Articles will appear printed together in a combined issue of the journal containing roughly a dozen in-depth review articles on Lp(a), which aims to provide the most comprehensive, insightful, and current overview of the Lp(a) field. The topics and authors for these review articles have already been decided and secured for this project. The publication is planned for the first quarter of 2022 and is expected to receive a high visibility.

For preparation of the Original Research manuscripts please see the **"Guide for authors"** at https://www.elsevier.com/journals/atherosclerosis/0021-9150/guide-for-authors.

The possibility for submission of the first draft of Original Research Papers for the mentioned issue of *Atherosclerosis* will end on October 31, 2021. This call is only open for Original Research Articles and no review articles are allowed. Please select "Special issue: Lp(a)" as article type at submission. All

To submit your paper go to: Editorial Manager®

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Issues 331 and 332 contain several articles addressing the prognostic role of comorbidities, imaging or circulating biomarkers in patients with stroke or acute coronary syndrome.

Impact of SARS-CoV-2 positivity on clinical outcome among STEMI patients undergoing mechanical reperfusion: Insights from the ISACS STEMI COVID 19 registry

SARS-CoV-2 predisposes patients to thrombotic complications, due to excessive inflammation, endothelial dysfunction, platelet activation, and coagulation/fibrinolysis disturbances. De Luca et al. aimed to evaluate clinical characteristics and prognostic impact of SARS-CoV-2 positivity among ST-segment elevation myocardial infarction (STEMI) patients undergoing primary percutaneous coronary intervention (PPCI).

The study included SARS-CoV-2 positive patients from the ISACS-STEMI COVID-19, a retrospective multicenter European registry including 6609 STEMI patients treated with PPCI. As a reference group, 5 SARS-Cov-2 negative patients per each SARS-CoV-2 positive patient were randomly sampled, individually matched for age, sex, and hospital/geographic area, giving a population of 62 positive SARS-CoV-2 positive patients compared with a matched population of 310 STEMI patients.

Study endpoints were in-hospital mortality, definite stent thrombosis, and heart failure. No significant difference was observed in baseline characteristics or the modality of access to the PCI center. In the SARS-CoV-2 positive patients, the culprit lesion was more often located in the right coronary artery. Despite similar pre and postprocedural thrombolysis in myocardial infarction (TIMI) flow, a trend for higher use of glycoprotein IIb/IIIa inhibitors and a significantly higher use of thrombectomy in the SARS-CoV-2 positive patients was observed. SARS-CoV-2 positivity was associated with a remarkably higher in hospital mortality, definite in-stent thrombosis and heart failure that was confirmed after adjustment for confounding factors.

This study shows that among STEMI patients, SARS-CoV-2 positivity is associated with larger thrombus burden, a remarkably higher mortality but also higher rates of in-stent thrombosis and heart failure.

Ticagrelor and the risk of infections during hospitalization in patients with ST-elevation myocardial infarction undergoing percutaneous coronary intervention

A growing body of data demonstrates that infection in patients with ST-segment elevation myocardial infarction (STEMI) is associated with a high risk of mortality and healthcare expenditures. Despite some antimicrobial properties of ticagrelor, current clinical recommendations on the usage of

antiplatelet drugs are mainly based on their efficacy and safety regarding the cardiovascular outcomes and bleeding. Their effect on infections in patients with STEMI undergoing percutaneous coronary intervention (PCI) is unclear. Lian et al. performed a propensity score analysis to investigate the effects of ticagrelor and clopidogrel on the infection rate during hospitalization in patients with STEMI undergoing PCI.

A total of 2116 consecutive patients with STEMI undergoing PCI were divided into the ticagrelor and clopidogrel groups. The primary outcome was infection onset. Secondary outcomes were in-hospital all-cause death and major adverse cardiovascular and cerebrovascular events (MACCE). Propensity score analyses were conducted to test the robustness of the results.

Infections developed in 327 patients. There was no significant difference in infection between both groups. Patients in the ticagrelor group had lower rates of in-hospital all-cause death and MACCE than patients in the clopidogrel group. Multivariate logistic regression analysis determined that ticagrelor and clopidogrel had a similar preventive effect on infections during hospitalization. Compared to the patients treated with clopidogrel, patients treated with ticagrelor had a slightly lower risk of other outcomes, but no statistical difference. Propensity score analyses demonstrated similar results for infections and other outcomes.

Compared with clopidogrel treatment, ticagrelor treatment did not significantly alter the risk of infections during hospitalization among STEMI patients undergoing PCI, but was associated with a slightly lower risk of in-hospital all-cause death and MACCE.

Clinical outcomes of low-intensity area without attenuation and cholesterol crystals in non-culprit lesions assessed by optical coherence tomography

Pathologically, intraplaque hemorrhage (IPH) has been shown to be one of the factors contributing to plaque destabilization and sudden increase in coronary plaque size, and is frequently co-located with cholesterol crystals (CC). Optical coherence tomography (OCT)-detected low-intensity area without attenuation (LIA) may represent IPH *in vivo*. Therefore, Usui et al. aimed to examine the prevalence and impact of OCT-detected LIA + CC in untreated non-culprit lesions (NCLs) on subsequent major adverse cardiac events (MACE).

OCT imaged NCLs in the culprit vessel in the patients who underwent OCT-guided percutaneous coronary intervention were included. An NCL was a lesion with >90° of diseased arc, ≥2 mm in length, and >5 mm away from stent edge. CC was defined as a thin linear region of high intensity. NCL-related MACE includes cardiac death, myocardial infarction, or ischemia-driven revascularization attributed to NCLs.

The study included 735 NCLs from 566 patients with 2.5 ± 0.7 years of follow-up. The prevalence of concomitant LIA with CC (LIA + CC) was 15.5%. Three-year NCL-related MACE rate was

2.9% at a lesion level and 15.6% at a patient level. Untreated NCLs with LIA + CC had an increased risk for NCL-MACE along with thin-cap fibroatheroma and minimum lumen area <3.5 mm^2. Patients having ≥1 untreated NCL with LIA + CC had an increased risk for NCL-MACE.

The results show that LIA + CC predicts future adverse cardiac event from untreated non-culprit lesions.

Plasma osteopontin levels and adverse clinical outcomes after ischemic stroke

Osteopontin is a multifunctional glycophosphoprotein secreted by a variety of cell types (e.g., osteoblasts, endothelial cells, macrophages) and plays important roles in various physiological and pathophysiological processes, including atherosclerosis. Osteopontin is expressed in atherosclerotic plaques and ischemic lesions, and its overexpression increases plaque destabilization and lesion size. High circulating osteopontin is associated with increased risk of adverse outcomes after cardiovascular diseases, and it could provide valuable prognostic information beyond the established traditional risk factors. In this study, Zhu et al. prospectively investigated the association between plasma osteopontin levels and adverse clinical outcomes in ischemic stroke patients.

Baseline plasma osteopontin levels were measured in 3545 ischemic stroke patients from the China Antihypertensive Trial in Acute Ischemic Stroke (CATIS). The primary outcome was the composite outcome of death and major disability (modified Rankin scale score ≥3) at 1 year after ischemic stroke, and secondary outcomes included major disability, death, and the composite outcome of death and vascular events.

During 1 year of follow-up, patients in the fourth quartile of plasma osteopontin had the highest risks of primary outcome, major disability, death, and the composite outcome of death and vascular events. After multivariate adjustment, the odds ratios or hazard ratios associated with each standard deviation increase in log-transformed osteopontin were 1.20 for primary outcome, 1.11 for major disability, 1.29 for death, and 1.15 for the composite outcome of death and vascular events. The addition of plasma osteopontin to conventional risk factors significantly improved the risk reclassification for the primary outcome.

Elevated plasma osteopontin levels at baseline are associated with increased risks of adverse clinical outcomes at 1 year after ischemic stroke, suggesting that osteopontin is a promising prognostic biomarker for ischemic stroke. Further studies are warranted to investigate whether osteopontin reduction would improve the prognosis of ischemic stroke.