52th Annual Congress on Neuroscience and Stroke

International Conference on
Heart and Cardiovascular Diseases

July 21, 2021 | Webinar

KEYNOTES SESSION

Potential pleiotropic effects of ticagrelor. What are we missing in the clinical setting?

Ticagrelor is a direct acting, reversibly binding P2Y12 receptor antagonist with demonstrated mortality benefit in the treatment of acute coronary syndrome (ACS), as well as the chronic management of ischemic heart disease. In addition to potent P2Y12 inhibition, ticagrelor also possesses potential off-target cardioprotective effects including acute protection against ischemia-reperfusion injury, and chronic effects involving recovery from reperfusion therapy, prevention of remodeling after infarction, and anti-inflammatory properties that counter the progression of atherosclerosis.

The pivotal role of ticagrelor was demonstrated in the landmark PLATO trial, which demonstrated superiority of dual antiplatelet therapy with ticagrelor over clopidogrel in patients with ACS treated with or without invasive revascularization. The favorable profile of ticagrelor over clopidogrel was seen across the vast majority of subgroup analyses. However, regional differences were observed with the primary endpoint tended to occur more frequently in the ticagrelor group compared to the clopidogrel group in the North American population. This lack of benefit of ticagrelor in the North American population was thought to be secondary to higher maintenance dosing of aspirin in the United States compared to other countries.

While the demonstrable benefit of ticagrelor is reflected in current practice guidelines, several smaller clinical trials have reported conflicting data regarding the cardiovascular benefit of ticagrelor. This review aims to identify potential explanations to account for the differences in the efficacy of ticagrelor between clinical trials. Iwill also analyze the basic science behind the pleiotropic effects of ticagrelor to facilitate a better understanding of these different outcomes.

Yochai Birnbaum,

Baylor College of Medicine, USA

Biography

Yochai Birnbaum has completed his MD in 1982 at the Hebrew University, Jerusalem, Israel. He is a Professor of Medicine and the John S. Dunn Chair in Cardiology Research and Education at Baylor College of Medicine, Houston, Texas. He has published 387 papers in reputed journals, and has been serving as an editorial board member of several journals. He is the Editor in Chief of Cardiovascular Drugs and Therapy.

Gut microbiota dependent Trimethylamine N-oxide biosynthesis, a universal metabolic pathway, contributes to cardiometabolic disease

Gut microbes can metabolize nutrient with structural formula containing trimethylamine (TMA) moiety, such as, phosphatidylcholine, choline, carnitine and γ-butyrobetaine in diet, to produce TMA and TMA is further oxidized as trimethylamine N-oxide (TMAO) catalyzed by host hepatic Flavin monooxygenases (FMOs). The TMAO metaorganismal pathway is a universal metabolic pathway, contributing to cardiometabolic disease. TMAO shows multiple pro-atherogenic properties including activating NF-κB, MAPK signaling, NLRP3 inflammasome and PERK pathway, leading to atherosclerosis, thrombosis, heart hypertrophy, chronic kidney disease, fatty liver disease and obesity even gallstone formation. TMAO can independently predict future risk for major adverse cardiac events (non-fatal myocardial infarction, stroke and death). Targeting this metabolic pathway by limiting TMA precursor enriched diet consumption, administration of prebiotic or probiotic to decrease the bacterium abundance which encodes enzymes involved in the conversion of TMA precursors to TMA or inhibitors to TMA lyase and FMOs, can decrease circulating TMAO, therefore ameliorating cardiometabolic disease.

Zeneng Wang

Lerner Research Institute, USA

Biography

Zeneng Wang is working in Department of Cardiovascular and Metabolic Sciences, Lerner at Research Institute, Cleveland Clinic, Cleveland, Ohio, USA. He is also working as an Assistant Professor in Case Western Reserve University, USA