

Cardiovascular events associated with proton pump inhibitors

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Acetylsalicylic acid (Aspirin) is widely indicated for Coronary Artery Disease (CAD) patients to decrease the incidence of cardiovascular events.¹ Above all, mucosal injuries associated with inhibition of prostaglandin synthesis, resulting in GI ulceration and bleeding, is a major side effect of the drug.¹ Therefore, a concomitant use of Aspirin and Proton Pump Inhibitors (PPIs) has been approved for CAD patients to prevent mucosa associated disorders.²

The mechanism of action of PPIs is by the inhibition of hydrogen/potassium (H-/K+) proton pump located on gastric parietal cells, where they bind irreversibly to its H-/K+ ATPase enzyme. This interaction blocks the secretion of hydrogen ions, which combine with chloride ions in the stomach lumen to form gastric acid.³

However, a recent study published in 2017 states that the use of PPIs increases risk of heart failure and death in CAD patients.³ This research included 706 patients admitted to 4 hospitals in Madrid with either ST-elevation myocardial infarction or non-ST elevation acute coronary syndrome. Of these 706 patients analysed, 431 were receiving PPIs. Majority of these patients (57.4%) were taking omeprazole. Patients receiving PPIs were older and had a more frequent history of cerebrovascular events than those not receiving them. It was proposed that this effect might be due to inhibition of H-/K+ ATPase which causes cellular acidosis and depression of myocardial contractility.

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Additionally, as per a case report published in 2016, two patients with known CAD and a history of gastro esophageal reflux disease presented with symptoms of refractory angina which were unresponsive to conventional medical therapy but successfully resolved on discontinuation of PPIs.⁴

Given that a significant number of CAD patients are treated with PPIs,⁵ even a minor effect on the cardiovascular system potentially carries considerable clinical impact.^{3,4} Therefore, it is essential that healthcare providers should be aware of these side effects to subsequently manage such patients efficiently.

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References

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