STUDENTS' CORNER
LETTER TO THE EDITOR

Proton pump inhibitors: Adversaries in our fight against antibiotic resistance?

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Madam, The proton-pump inhibitors (PPIs) belong to a class of medications that reduce stomach acid production by irreversibly inhibiting the stomach's H^+/K^+ ATPase pump. These medications are used in the treatment of many conditions, such as peptic ulcer, gastroesophageal reflux, as part of H. Pylori eradication, gastrinomas, Barrett's oesophagus and many other conditions. They are considered to be the most potent inhibitors of acid secretion, and have largely supplanted the H_2 receptor antagonists and antacids. They are also among the most widely sold medications worldwide. The class of proton pump inhibitors is listed on WHO's list of essential medicines.[1] Proton pump inhibitors are generally well tolerated. However, headache, nausea, diarrhoea, abdominal pain, fatigue, and dizziness are identified as some of the common side effects. Due to their efficacies and low risk profile, PPIs are often prescribed for extend than required period.

Several recent studies have shown that long-term PPI use is associated with various adverse outcomes. A 2023 study published in JAMA Network Open demonstrated that long-term use of PPIs may lead to an increased risk of acquiring extended-spectrum beta-lactamase (ESBL) and carbapenemase-producing enterobacterales.[2] Another study[3] published in 2022 showed that PPI use was the only modifiable factor associated with the carriage of ESBL producers in residents of long-term care facilities. These studies add to the expanding list of adverse outcomes associated with PPIs. Other adverse events of long-term PPI use, include the risk of fractures, pneumonia, Clostridium difficile diarrhoea, hypomagnesaemia, vitamin B12 deficiency, chronic kidney disease and dementia.[4]

Proton pump inhibitors are still used widely in Pakistan. These new findings are concerning as ESBL-producing Enterobacteriaceae are highly prevalent in Pakistan. A meta-analysis showed that the overall pooled proportion of ESBLs in Pakistan is 40%[5] whereas the German population showed an estimated ESBL proportion in the range of 10 to 15% and a US census reported 4 to 12% resistance due to ESBLs.[5] This calls for a strict prescription control of PPIs by Pakistani physicians, and the duration of PPI use should not extend for longer than needed. In addition, the practice of PPI's over the counter sale by the pharmacists in Pakistan should be stopped. Additional precautions should be taken in hospitalized patients who are using PPIs to prevent them from getting multi-drug resistant infections.

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