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PPI deprescribing in the geriatric hospital. Is it worth a trial?

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ABSTRACT

Background: *Proton pump inhibitors (PPI) are generally well tolerated. However, PPI treatment for more than eight weeks is rarely indicated and increases the risk of adverse events. In patients of a geriatric hospital, we examined the feasibility of deprescribing PPIs when longer than 8 weeks use was inappropriate.*

Methods: *In a cross-sectional survey, all patients who were receiving a PPI were re-examined, in pondering indication for ongoing PPI treatment. Those inadequately receiving PPI were candidates for deprescribing. At study conclusion 80 days later the patient files were reviewed for PPI use, gastrointestinal symptoms, new or aggravated anemia.*

Results: *Out of 80 patients in both departments (median age 78 years, median frailty score 7 out of 9 points), 63 received a PPI. Continuation of PPI treatment was inappropriate according to guidelines in 26 patients. Deprescribing the PPI was accepted by patients or nearest kin in 20 patients. On study conclusion, eighty days after initiating deprescribing, 10 patients were off PPI, 2 were receiving minimal dose PPI, 6 had restarted PPI. Represcribing was requested upon occurrence of dyspepsia or an ambiguous abdominal discomfort.*

Conclusion: *Among severely frail residents of the geriatric hospital, deprescribing PPIs was feasible. However, resuming the PPI was common, like the high rates of restarting PPI treatment reported in the literature. We advocate that deprescribing should take into consideration the patient's life expectancy, ability to communicate symptoms, bleeding risk, as well as experts' opinion that the main value in deprescribing PPI treatment is a reduced pill burden and cost.*

Keywords: *PPI, proton pump inhibitor, deprescribing, geriatric, frailty.*

Introduction

Proton pump inhibitors (PPI) are effective antiacid medications, reducing acid secretion by 80–95% by blocking the proton pump in gastric parietal cells. PPIs are the primary antiacid in use for treatment of peptic ulcers, Zollinger-Ellison syndrome, gastroesophageal reflux disease, and gastroprotection under medications that may increase the bleeding risk [1,2].

PPIs have a reasonable safety profile. Adverse reactions to PPIs occur at a rate of 1-5%, mainly abdominal pain, flatulence, constipation, diarrhea, vomiting, skin rash, asthenia, dizziness, hypomagnesemia, and rarely toxic epidermal necrolysis, hemolytic anemia, tubulointerstitial nephritis, pancreatitis, liver failure, angioedema, anaphylaxis, increased risk of infections, vitamin B12 deficiency, and a possible increased risk of dementia [3]. Awareness of severe adverse effects of PPIs led to formulation of safety warnings [4-7]. Geriatric guidelines comprised in Beers Criteria and START/STOPP criteria recommend avert from longer than 8 weeks PPI use except in high-risk patients [8,9].

Still, overprescription of PPIs is frequent according to recent reports, along with successful deprescribing of PPIs. Successful describing of PPIs has been reported in community settings and in acute care hospitals [10-16] but there is paucity of reports from geriatric long-term care hospitals [17] like our institution. After successful deprescribing, restarting PPI treatment is common being reported in 19% [17] up to 71% [15] of cases.

We examined in the present study the feasibility of deprescribing PPIs in a geriatric hospital and the patient outcomes after deprescribing.

Materials and Methods

Our institution is a multi-profile geriatric medical center, affiliated to the Bruce and Ruth Rappaport Faculty of Medicine, Technion, Israel. The present study addressed residents in two departments of comprehensive geriatric care, pursuing adjustment of PPI treatment guidelines. The study was approved by the Bait Balev Review Board for human studies (approval number 0009-25-BBL).

In a cross-sectional survey, the medical director of each of the two departments re-examined all patients who currently were receiving PPI treatment, to consider continuing or deprescribing the PPI. Excluded from the study were patients in unstable clinical condition and those terminally ill. Indications for continuing or deprescribing PPI treatment were based on the American Gastroenterological Association (AGA) guidelines [12]. Accordingly, PPI treatment for longer than 8 weeks is indicated for Barrett's esophagus, Zollinger–Ellison syndrome, erosive esophagitis (LA grade C/D), peptic strictures, esophageal scleroderma, eosinophilic esophagitis, for prevention of pulmonary fibrosis progression, and for gastroprotection in patients at high risk of gastrointestinal bleeding. In accordance to common understanding [12], people are at high risk of gastrointestinal bleeding if older than 60 years of age and having severe medical comorbidity, receiving NSAID or aspirin, antithrombotic or oral corticosteroid medications.

Deprescription was negotiated by joint decision-making between the physician and the patient or with her or his nearest kin [18]. Two modalities of deprescription were used based on the physician's preference: either tapering the PPI dose over a period of four weeks prior to discontinuation or replacing the PPI with an H2 antagonist [12]. Eighty days after initiation of deprescribing, an independent observer reviewed the patient files, in scrutinizing demographical data, frailty scores ranging from very fit score 1 to terminally ill score 9 according to the Rockwood scale [19], the CDR dementia severity scores [20], multimorbidity defined as two or more chronic disorders [21], the specific type of PPI in use, PPI dose at the timepoint when deprescribing was started, and the duration of continuous PPI use. Occurrence of new gastrointestinal symptoms after PPI deprescribing and new or worsening anemia was reported.

Results

At the time of study started, 63 out of 80 patients in both departments were receiving PPI treatment. PPI treatment was appropriate in 37 patients by AGA standards [12], in their majority for gastroprotection under platelet antiaggregant drugs combined with an anticoagulant, or at high risk of bleeding according to Padua score. In 26 patients, there was no current indication for PPI treatment and deprescribing was proposed. In 6 cases, the recommendation to deprescribe PPI treatment was not accepted by patient or family.

In 20 patients PPI deprescribing was initiated. There were 10 males and 10 females, the patients' median age was 75 years (range 66 -94 years), their median frailty score was 8 (range 6-9), their median CDR dementia score was 1 (range 0-3), the median number of chronic diseases was 2 (range 2-5). Two patients suffered from cancer and were receiving oncological treatments, 2 patients were confined to palliative hospice care, 2 patients were in unresponsive wakefulness state, and 2 patients had a remote history of gastrointestinal bleeding. The median duration of PPI treatment in the cohort was 5 months (range 2-65 months). 11 patients were receiving esomeprazole (80 mg daily in 2 patients, 40 mg daily in 5 patients, 20 mg daily on 4 patients), 8 patients were receiving omeprazole (40 mg daily in 3 patients, 20 mg daily in 5 patients), one patient received lansoprazole 30 mg daily.

At the end of the study, 10 patients were off PPI (in 4 cases PPI was replaced by famotidine), 2 patients were receiving minimal therapeutic dose of PPI, 6 patients had PPI treatment restarted according to patients' family members wish, when dyspeptic symptoms or an unspecific discomfort was noticed. One patient died; another patient was transferred to elective orthopedic surgery and no follow-up was possible. There was no evidence of overt gastrointestinal bleeding, new anemia, or decrease in hemoglobin by 1 gram or more amongst all patients who discontinued PPI.

Discussion

PPIs are overused worldwide [13]. Likewise in our institution of long-term geriatric care the use of PPIs was prevalent, in as many as 79% were receiving PPIs at the time the survey was started. PPI treatment was appropriate in 46% patients and inappropriate in 33% when the risks under PPI treatment were assumed to outweigh the benefits [12]. When PPI treatment is no longer indicated, deprescribing the PPI should be the rule.

Successful depression of PPIs has been reported in community settings and acute care hospitals [10-15]. We found one published study on deprescribing PPIs a in geriatric ward [17], to which our present study can be added and compared [17]. There are recognized barriers to deprescribing PPIs, some physician centered barriers as well as patient centered barriers [22].

Physician-centered barriers to deprescribing PPIs may be due to inappropriate original PPI prescription, missing comprehensive medication reviews, lack of familiarity with guidelines, a gap between physician awareness of directives and their implementation, and physician burnout. Patient-centered barriers to deprescribing PPIs include the belief that the PPI is necessary for their condition, that PPIs are preferable to other medicines for their condition, the fear of symptom recurrence, and unawareness of the risks associ-

ated with long-term PPI use. Barriers to deprescribing PPI might be more challenging in patients of long-term geriatric care, as they suffer from severe frailty and multimorbidity, with frequent exacerbations of chronic conditions.

Most patients in the present study were characterized by very severe frailty expressed as the median frailty score of 8 on Rockwood Clinical Frailty Scale which means being completely dependent, approaching the end of life, and with increased vulnerability by acute illness [19]. This might explain the hesitancy of physicians often the reluctance of patients or their nearest kin to accept deprescribing the PPI. This may also explain the precipitous renewal of PPI treatment upon recurrence of dyspeptic symptoms or of ambiguous discomfort. Returning to PPI treatment after discontinuation is reported in the literature at the rate of 19% [17] to 71% [15]. The data of a study conducted in the long-term care department of a French geriatric hospital [17] is comparable to ours. 97 patients had their treatment re-evaluated and in 54,6% of the re-evaluated patients the PPIs were discontinued. After 3 months, in nine patients (19.1%) the PPI had been restarted [17]. This compares to 6 (32%) restarts in our study.

In the light of the present study, it is questioned whether the known advantages of PPI deprescribing in the general population are also to be expected for patients in geriatric long-term care, who are severely frail, suffering from chronic diseases, and at risk of acute deterioration? In a personalized approach, there are several issues to consider: a predictable short or long patient survival, the patients' ability or difficulty in communicating symptoms, the bleeding risk possibly enhanced by intercurrent illness (e.g. stress ulcer, coagulation disorder acute liver injury or sepsis, adverse effects of medications), as well as family members' bad feelings when the inevitable occurs. Not to be overlooked the expert opinion that the main value in reducing PPI treatment is a reduced pill burden and reduced drug costs [16].

Conclusion

There is need for more data in answering the question whether deprescribing PPI is worth a trial in severely frail patients of long-term geriatric hospitals. Personalized management is our current practice.

Conflicts of Interest

The researchers claims that they have no conflict of interest.

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Author contributions

- **Jochanan E. Naschitz:** conceptualization of the work and methodology, data curation, writing the original draft.
- **Gregory Leibovitz:** investigation, data curation, review and editing.
- **Igor Yalonetski:** investigation, data curation.

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