The Effectiveness of Prophylactic Proton Pump Inhibitors for Prevention of Non-Steroidal Anti-Inflammatory Drugs Associated Gastric and Duodenal Ulcers in Elderly

Babikir Kheiri  
Core Medical Trainee, Wrexham Maelor Hospital, UK

Ahmed Mabrouk  
ST1, Trauma and Orthopaedics, Macclesfield DGH, UK

Imran Ahmed  
General Practitioner High Street Surgery, Waters Green Medical Centre, UK

Hashim Khan  
Specialist Registrar in Acute Medicine, Wrexham Maelor Hospital, UK

Azeem S Sheikh  
Specialist Registrar in Cardiology, Wrexham Maelor Hospital, UK

ABSTRACT

Aims was undertaken to ensure concomitant usage of proton pump inhibitors (PPIs) with Non-Steroidal Anti-inflammatory Drugs (NSAIDs) in Elderly, in order to avoid upper gastrointestinal (GI) symptoms and ulcers.

Methods: Reviewing of 386 patients' prescription on the EMIS (Egton Medical Information Systems) Web, on April 2014. Checking who have not been prescribed PPIs with NSAIDs, offering them appointment for prescription and discussion about risks and benefits of PPIs. Re-audit of 390 patients' prescription on the EMIS Web, on July 2014. Exclusion criteria in the audit and re-audit were; NSAIDs usage for more than 3 years, contra-indications for PPIs, and patients who declined inclusion in the audit.

Results: In the first audit cycle, a total of 386 patients' prescription reviewed, 23 (6%) patients were not prescribed PPIs with NSAIDs and were eligible for PPIs prescription. Those patients were contacted by post, an appointment arranged for them and prescribed the PPIs. 12 weeks later a re-audit was done, showed that all patients (100%) who are prescribed NSAIDs are prescribed prophylactic PPIs. None of the patients who are prescribed NSAIDs and PPIs concomitantly developed upper GI symptoms or ulcers.

Conclusions: The audit increased the awareness of the junior doctors of the importance of concomitant prescription of PPIs with NSAIDs, in accordance with the electronic Medical Compendium (eMC) guidelines, to prevent upper GI symptoms and ulcers. That was reflected in the re-audit having 100% of the patients prescribed NSAIDs and PPIs concomitantly.

Keywords: non-steroidal anti-inflammatory drugs, proton pump inhibitors

Introduction

More than 5,000 years have passed since a Greek physician prescribed extracts of willow bark for musculoskeletal pain. But it was not until 1897 that Felix Hoffm synthesized acetylsalicylic acid (ASA), the first NSAID.1 Nowadays, NSAIDs are among the most commonly used drugs worldwide and their analgesic, anti-inflammatory and anti-pyretic therapeutic properties are thoroughly accepted.1 They are weak organic acids and are the most commonly used drugs in Orthopaedic and Trauma practice. They provide mild to moderate pain relief. NSAID share common therapeutic and side effects irrespective of the class or group to which an individual drug may belong. These side effects are many and varied and constitute a major concern in their usage since most of them are life threatening. The NSAIDs are also one of the most commonly abused drugs. The abuses stem mostly from poor prescription habit by the health professionals.2 Evidence on the relative safety of the non-selective NSAIDs indicates differences in the risks of serious upper gastrointestinal side-effects/ Piroxicam, Ketoprofen, and Ketorolac are associated with highest risk; Indomethacin, Diclofenac and Naproxen are associated with intermediate risk and Ibuprofen with the lowest risk.3 Chronic NSAIDs are associated with gastric and duodenal ulcers especially in vulnerable elderly patients.4

Aims

This report is aimed to ensure that all elderly patients, who are taking NSAIDs on a regular basis are prescribed prophylactic PPIs and are aware of the benefits and risks of these medications,
to prevent development of upper gastrointestinal symptoms and ulcers.

**Audit standards**

From the electronic Medicine Compendium (eMC), Prevention of NSAID-associated gastric and duodenal ulcers in patients at risk; For the prevention of NSAID-associated gastric ulcers or duodenal ulcers in patients at risk (age > 60, previous history of gastric and duodenal ulcers, previous history of upper GI bleeding) the recommended dose is Omeprazole 20mg once daily.

**Methods**

A retrospective audit of 386 patients prescribed regular NSAIDs, from the EMIS Web in High Street Surgery, on April 2014. Through reviewing patients prescriptions, patients whom were not prescribed prophylactic PPIs and are suitable for inclusion in the audit, were offered an appointment for prophylactic prescription of PPIs. A re-audit was done 12 weeks later of 390 patients from the EMIS Web. Exclusion criteria in the audit and re-audit were; NSAIDs usage for more than 3 years, contra-indications for PPIs, and patients who declined inclusion in the audit.

**Results**

A total of 386 patients on NSAIDs were included in the audit on April 2014. 273 (71%) patients were prescribed concomitant prophylactic PPIs. 113 (29%) patients were not on PPIs, of them 90 (23%) patients were excluded. Postal letters were sent for the 23 (6%) patients who were prescribed NSAIDs without prophylactic PPIs. The 23 patients were seen in the practice, where the benefits and risks of concomitant use of PPIs were discussed and PPIs were prescribed. A re-audit was done 12 weeks later.

In the re-audit, a total of 390 (100%) patients on NSAIDs were included, on July 2014. 277 (71%) patients were prescribed prophylactic PPIs. 110 (29%) patients were excluded, as shown in Figure 1.

None of the patients, who were prescribed NSAIDs and PPIs regularly, developed gastric or duodenal ulcers.

**Discussion**

The GI damage caused by NSAIDs can be ameliorated in a number of ways – most effectively by stopping the drug (often an impractical solution), by selecting a less toxic NSAID or by adding a second drug, either prophylactically or following a complication. The introduction of the cyclo-oxygenase (COX)-2 selective NSAIDs in the late 1990s promised a revolution in NSAID therapy due to sparing of the COX-1 pathway, providing effective control of inflammation and leading to fewer ulcers and bleeding complications. These drugs were widely prescribed until evidence of cardiovascular side effects, including an increased risk of myocardial infarction, gradually began to emerge, and some of the COX-2 NSAIDs were eventually withdrawn from general use in Europe and North America.

In our study, we followed the most effective practical way, which is adding a second drug (PPIs).

According to research review, six randomized controlled trials (RCTs) with 1,259 participants assessed the effect of PPIs on the prevention of NSAID-induced upper GI injury. PPIs significantly reduced the risk of both endoscopic duodenal ulcers and gastric ulcers compared with placebo. In our studies, neither of the 273 patients in the audit nor the 277 patients in the re-audit, who were prescribed concomitant PPIs and NSAIDs, developed upper GI symptoms or ulcers.

**Conclusions**

While the underutilization of gastro-protective strategies for patients at risk for NSAID complications is well recognized as a failure of physician behavior, patient adherence to medication is an equally important barrier to the success of any risk-reducing strategy. All our patients were given clear information about the benefits and risks of PPIs and the importance of adherence to medication in preventing upper GI symptoms and ulcers.

Gastroprotective drugs are not prescribed to elderly NSAID users according to guidelines. Greater awareness of factors contributing to NSAID-induced GI complications is warranted, particularly with respect to advanced age. Both of these points were the main focus of our audits' recommendations.

**RECOMMENDATIONS**

A change in practice was made after the initial audit by Prescribing Prophylactic PPIs for patients who were prescribed regular NSAIDs without concomitant PPIs.

After the re-audit it was recommended to: Continue the same practice, arrange an educational session for junior doctors to increase their awareness of factors contributing to NSAID-induced GI complications, particularly with respect to advanced age. And a re-audit is to be done 12 month later.

**REFERENCES**


ADDRESS FOR CORRESPONDENCE
Babikir Kheiri, MBBS, 87 Bron y Nant, Croesnewydd Road, Wrexham, LL13 7TZ, Tel: +447472263222; email: b_o_k2002@hotmail.com