Concomitant prescription of oral fluoroquinolones with an antacid preparation

Sir,

The advent of histamine H_2-receptor antagonists and proton pump inhibitors has significantly reduced usage of antacids in the management of acid peptic disorders. Nevertheless antacids, particularly those containing a combination of magnesium and aluminum salts, are still commonly prescribed for symptom relief. Their use is especially significant in settings where cost is a consideration.

However, the potential of antacids to interact with other concomitantly ingested drugs is well recognized. These interactions usually result in reduced or delayed absorption of the affected drug, although an increase in absorption of some drugs has also been noted with magnesium hydroxide or sodium bicarbonate.[1,2]

While the clinical significance of some of these interactions with antacids is unclear, antacids do interfere with the absorption of most members of the fluoroquinolone group of antimicrobials.[1,3-5]

Yet, during the course of a routine prescription audit undertaken in our hospital, we came across several prescriptions containing an antacid as well as a fluoroquinolone. We therefore decided to investigate the extent of this practice by specifically looking at such prescriptions. Since ciprofloxacin and norfloxacin are the fluoroquinolones available in our hospital formulary, prescriptions containing these were selected for scrutiny.

Over a period of two months (24 Feb to 24 Apr 2011), all out-patient prescriptions presented in the Hospital Pharmacy of Indira Gandhi Medical and Research Institute, Pondicherry,

India, which contained a fluoroquinolone along with an antacid were scrutinized.

Drugs prescribed, along with their strength, frequency, duration of prescription were noted. Any special instruction regarding the intake of the antacid in relation to concomitant drugs was also noted.

A total of 37,291 prescriptions were presented at the pharmacy over two months. Of these 2830 (7.59%) prescriptions included an antacid containing dried aluminum hydroxide 250 mg plus magnesium hydroxide 250 mg. Amongst these, 135 (4.8% of those containing an antacid) prescriptions contained a fluoroquinolone-ciprofloxacin (117) or norfloxacin (18) [Table 1].

Average duration of prescription was 4.07 days. None of the prescriptions contained any special instruction regarding intake of the fluoroquinolone (or other drugs) in relation to the antacid.

Strength of fluoroquinolone was not written in 76 (56.3%) of the study prescriptions. Only one prescription failed to mention the duration of treatment.

Most (94.8%) of the prescriptions that contained an antacid and a fluoroquinolone also included one or more additional drugs, for instance non-steroidal anti-inflammatory drugs (78 prescriptions), metronidazole (31 prescriptions) and ranitidine (21 prescriptions) [Table 1].

Decreased absorption of co-administered drugs by antacids may result in suboptimal therapeutic outcome. Therefore, knowledge of the potential effect of antacids on the absorption of other drugs is clinically important. Co-administration of antacids has the potential to cause therapy failures due to reduced oral bioavailability of several drugs. This is particularly important in case of antimicrobials where therapy failure is not only detrimental to the patient being treated, but may also contribute towards development of antimicrobial resistance.[6]

Table 1: Fluoroquinolones and other oral drugs prescribed concomitantly with antacids

Drug	No. of prescriptions	% (*n*=135)
Fluoroquinolones		
Ciprofloxacin*	117	86.7
Norfloxacin	18	13.3
NSAIDs**		
Acetaminophen	61	45.2
Ibuprofen	9	6.7
Diclofenac	8	5.9
Anti-ulcer drugs		
Ranitidine	21	15.6
Famotidine	7	5.2
Omeprazole	1	0.7
Others		
Metronidazole	31	23
Dicyclomine	15	11.1
Vitamin B complex	15	11.1
ORS***	13	9.6
Cetirizine	8	5.9

*Eight prescriptions included ciprofloxacin eye drops in addition to oral ciprofloxacin; **NSAIDs=Non-steroidal anti-inflammatory drugs; ***ORS=Oral rehydration solution

If antacid use is warranted in a patient on another drug, especially one whose absorption may be compromised by antacids, its ingestion needs to be carefully monitored in relation to the administration of the concomitant drug. Usually a period of two hours before or after antacid administration is considered appropriate for administration of co-prescribed drugs.[7] But in our study we found no written instructions to patients to this effect. While verbal advice may have been imparted during patient consultation, it is advisable to put it down on the prescription slip, so that it can be re-enforced by the dispensing pharmacist.

In more than half the prescriptions (56.3%) which included a fluoroquinolone, strength of the fluoroquinolone was not mentioned. This is especially significant since these antimicrobials are available in multiple strengths.

We also encountered prescriptions containing drugs in addition to the fluoroquinolones, co-administered with antacids. Of these [not all are shown in the Table 1] there is evidence in literature for a potential decrease (ferrous sulphate,[1] Histamine H-2 blockers[8]) or an increase (ibuprofen, glibenclamide)[2] in absorption for several drugs when given with antacids.

Antacids are likely to continue to be used, particularly in developing countries, for non-ulcer dyspepsia and minor episodes of heartburn. In this scenario their interactions with concomitant drugs need to be emphasized to prevent any compromise in drug absorption and the ensuing pharmacological action.

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Website: www.jpharmacol.com

DOI: 10.4103/0976-500X.110898