N. A. Mustafa
G. Aktürk
I. Özen
I. Köksal
N. Erciyes
M. Solak

Acute stress bleeding prophylaxis with sucralfate versus ranitidine and incidence of secondary pneumonia in intensive care unit patients

Received: 24 March 1994
Accepted: 13 July 1994

Sir: It is well established that alkalinization of the gastric juice with H2-receptor antagonists causes colonization of the stomach with aerobic Gram-negative bacilli, which then facilitate colonization of the hypopharynx and tracheo-bronchial tree [1] leading to an increased risk of pneumonia [2]. Therefore an alternative approach of stress bleeding prophylaxis would be with a method which has little or no effect on gastric pH. So thirty one critically ill patients were studied prospectively in intensive care unit (ICU) to determine the frequency of stress ulceration bleeding, and secondary pneumonia. The patients were randomly assigned to receive either sucralfate ($n = 15$) 2 g every 6 hrs via the nasogastric tube or ranitidine ($n = 16$) intravenously (100 mg every 8 h).

Patients who received sucralfate had an unexpectedly high mean gastric pH 4.9. This finding may be partially due to gastric exocrine failure which occurs in such patients [3]. Ranitidine therapy still produced a significantly more alkaline mean gastric pH 6.1 and this was statistically significant as compared with sucralfate treated patients ($p < 0.01$). The more alkaline gastric pH in ranitidine treated-patients permitted more frequent gastric colonization by Gram-negative bacilli as compared to sucralfate-treated patients (50 versus 26%) but this was not significant statistically ($p > 0.05$). The colonization of the oropharynx (56.2% versus 40%) and the tracheostomy (68.7 versus 53%) in patients treated with ranitidine was more frequent than that of sucralfate-treated patients, and the difference between two groups was not significant statistically ($p > 0.05$). The colonization of the oropharynx and the tracheostomy were obviously more frequent than the bacterial colonization of the stomach, this could be attributed to uncontrolled exogenous contamination and frequent cross-infection in patient of ICU. The incidence of secondary pneumonia was more frequent in ranitidine-treated patient group compared with sucralfate-treated patients (56 versus 20%) and the difference between the two groups was statistically significant ($p < 0.05$) but the isolated microorganism from tracheostomy and endotracheal tube samples was not necessary of the gastric origin. Only three patients treated with ranitidine (18.5%), and one patient treated with sucralfate (6.5%) have had secondary pneumonia caused by the same bacterial agent isolated for the stomach. There was only one case of gastro-intestinal bleeding due to stress gastritis in ranitidine-treated group, detected clinically, which was treated conservatively with no requirement of surgical intervention.

These results are comparable with that of other investigators [4, 5] who demonstrated an increased frequency of pneumonia in ranitidine-treated patients. In ICU patients, sucralfate is as effectice as ranitidine, in the prevention of stress ulceration. However, gastric bacterial colonization is significantly reduced with substantial reduction in the frequency of secondary pneumonias. Therefore, the routine use of sucralfate as prophylaxis for stress ulceration and gastrointestinal bleeding in ICU patients is recommended.

References

1. Garvey B, McCambley JA, Tuxen DV (1989) Effects of gastric alkalization on bacterial colonization in critically ill patients. Crit Care Med 17:211
2. Tryba M (1987) Risk of acute stress bleeding and nosocomial pneumonia in ventilated intensive care unit patients: sucralfate versus antacids. Am J Med 83:117
3. Stannard VA, Hutchinson A, Morris DL et al (1988) Gastric exocrine "failure" in critically ill patients: incidence and associated features. Br Med J 296:155
4. Kappstein I, Schulgen G, Friedrich T, Hellinger P, Benzing A, Geiger K, Daschner FD (1991) Incidence of pneumonia in mechanically ventilated patients treated with sucralfate or cimetidine as prophylaxis for stress bleeding: bacterial colonization of the stomach. Am J Med 91:125–131
5. Driks MR, Craven DE, Celli BR et al (1987) Nosocomial pneumonia in intubated patients randomised to sucralfate versus antacids and/or histamine type 2 blockers: the role of gastric colonization. N Engl J Med 317:1376

N. A. Mustafa (✉)
Intensive Care Unit, Faculty of Medicine,
K. T. Ü Farabi Hastanesi,
Cerrahi Yoğun Bakim, TR-61080 Trabzon,
Turkey

G. Aktürk · I. Özen · N. Erciyes
M. Solak
Department of Anaesthesia,
Faculty of Medicine,
K. T. Ü. Farabi Hastanesi,
Cerrahi Yoğun Bakim, TR-61080 Trabzon,
Turkey

I. Köksal
Department of Microbiology,
Faculty of Medicine,
K. T. Ü. Farabi Hastanesi,
Cerrahi Yoğun Bakim, TR-61080 Trabzon,
Turkey

J. M. Saïssy
B. Guignard
B. Pats
M. Guiavarch
B. Rouvier

Pulmonary edema after hydrogen peroxide irrigation of a war wound

Received: 8 May 1994
Accepted: 30 August 1994

Sir: In emergency surgery, hydrogen peroxide is used in 3% solution for its antiseptic properties to prevent gas gangren. Several cases of serious accidents mostly gas embolism caused by the transformation of hydrogen peroxide into water and oxygen under the effect of catalase, an enzyme present in blood and most tissues have been reported [1, 2]. A new case is reported where a patient developed a pulmonary edema during war surgery.

A previously healthy 31-year-old man was wounded by a shrapnel in Sarajevo (open fracture of the right patella, extensive muscle damage of the left thigh). He was treated locally and evacuated 24 h later. When the subject arrived at the hospital the local inflammation and the fear of gas gangrene prompted physicians to decide to re-operate under general anesthesia. After injection of 400 ml of hydrogen peroxide under pressure into the various interspaces separating contused muscle masses of the left thigh substantial swelling of the thigh was observed, followed by sudden tachypnea with desaturation, SpO_2 dropping from 99% to 94%. Precordial auscultation revealed a loud