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Title: ANTACID PLUS FOODSTUFF ASPIRATION IN THE DOG

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Since aspiration of acid gastric contents results in more severe lung damage than does aspiration of non-acid gastric contents, it has been suggested, and is commonly accepted, that antacids be given to all parturients who may receive general anesthesia. We have shown, however, that aspiration of particulate antacids (Kolantyl-Gel) may produce considerable lung damage themselves.¹ We have also shown that 0.3 M Na Citrate, a clear antacid, produces considerably less pulmonary damage than does either acid or particulate antacid aspirates.² In these previous studies, the two antacids were mixed separately with saline to form the aspirate. Although it was necessary to study antacids in such an uncontaminated manner, we believed it was now necessary to study them mixed with partially digested food.

Methods. Twenty-four mongrel dogs were utilized. One dog with a chronically implanted gastrostomy tube was the source of the foodstuff.³ The other twenty-three were divided into three groups. Group I (N = 7) received a mixture of 0.5 cc/Kg foodstuff and 1.5 cc/Kg saline. Group II (N = 8) received a mixture of 0.5 cc/Kg foodstuff and 1.5 cc/Kg Kolantyl-Gel. Group III (N = 8) received a mixture of 0.5 cc/Kg foodstuff and 1.5 cc/Kg 0.3 M Na Citrate. All mixtures were adjusted to pH 5.9. The dogs were anesthetized with pentobarbital, instrumented with arterial lines and pulmonary artery catheters. Arterial and venous blood gases, heart rates, and blood pressures were measured and recorded at 0, 10, 30, 60, 90, 120, 180, and 240 minutes. Surviving dogs were sacrificed at 48 hours and their lungs examined histologically.

Results. Although physiologic changes were marked in all groups following aspiration, there were little differences between groups as seen in Figure 1. Likewise, the histological changes were similar and consisted mostly of varying degrees of granuloma formation, acute inflammation, hemorrhage and edema. Antacid particles were found in those animals receiving Kolantyl-Gel. Animals dying within four hours exhibited foodstuff in the terminal bronchioles. The four hour mortality figures are the most striking and are seen in Table 1. Figures from previous studies are included for comparison.

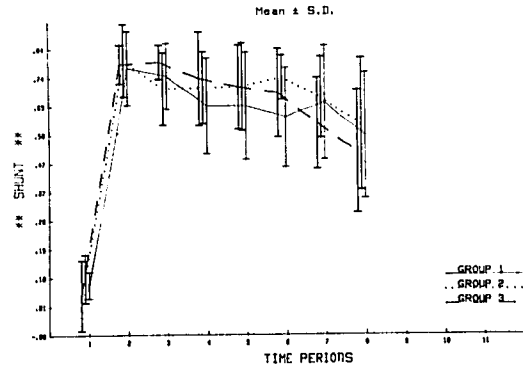


Figure 1. Per cent shunt following aspiration of foodstuff plus saline (Group I), foodstuff plus particulate antacid (Group II) and foodstuff plus non-particulate antacid (Group III).

Table 1
Foodstuff and Antacid
Four Hour Mortality

Groups	N	%
I (FS + NS)	0/7	0
II (FS + KG)	4/8	50
III (FS + Na Cit)	0/8	0
Na Cit	0/8	0
Kol-Gel	0/8	0

I vs. II P < 0.051

II vs. III P < 0.038 (Fisher's exact test)

Conclusion. Although mixtures of foodstuff and either particulate or clear antacids produce similar histologic and physiologic derangements in animals surviving aspiration, this study provides evidence that clear antacids are safer than emulsion antacids as a means of raising the pH of stomach contents.

References.

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