

Restraint-induced gastric ulcers in the golden hamster

SIR,—Physical restraint has been reported to cause a high incidence of gastric ulcers in rat, mouse, and guinea-pig. The low incidence of spontaneous ulcers in the golden hamster has discouraged its use in experiments on ulcer formation (Brodie & Hanson, 1960).

We have found that 40 hr of fasting followed by 4 or 7 hr of restraint (Bonfils, Dubresquet & Lambling, 1960) regularly caused the formation of gastric ulcers in male golden hamsters (*Mesocricetus auratus*) weighing 100–200 g.

The areas of mucosal ulceration with or without haemorrhage occurred in the glandular portion of the stomach and were similar to those seen by Bonfils, Richir & others (1959) in the rat. The incidence and the mean number of ulcers were high in all our experiments. However, many animals were used because of the variability in response.

TABLE 1. INCIDENCE OF EXPERIMENTAL GASTRIC ULCERS IN THE GOLDEN HAMSTER: INFLUENCE OF BILATERAL VAGOTOMY AND ADRENALECTOMY

Operative procedure	Animals with ulcers	Ulcers	
		Incidence %	Mean \pm s.e.
Normal*	1/26	3.8	1 —
Fasted†	19/55	34.5	2.15 \pm 0.22
Fasted + restrained 4 hr	20/26	77	3.75 \pm 0.58
Fasted + restrained 7 hr	65/73	89	7.23 \pm 0.82
Vagotomized‡	6/24	25	1.83 \pm 0.40
Sham-operated	23/31	74	4.65 \pm 0.48
Adrenalectomized§	24/32	75	4.33 \pm 0.58
Sham-operated	14/21	66.6	4.00 \pm 0.85

* Animals fed normally and kept in usual conditions.

† 40 hr.

‡ Fasted for 40 hr and vagotomized before 4 hr restraint.

§ Adrenalectomized 2 days before fasting for 40 hr and restraint for 7 hr.

Vagotomy reduced the incidence and mean number of restraint-induced ulcers for each animal. It would seem therefore that, as in the rat (Watanabe, 1966), parasympathetic activity plays an important role in ulcer formation in this animal species. In contrast, adrenalectomy did not significantly influence the ulcerogenic effects of restraint, the incidence and mean number of ulcers being similar in the two comparable groups of sham-operated and adrenalectomized animals. Because accessory adrenals are absent in hamsters (Schroeder & Bohle, 1957), it may be concluded, that secretion of adrenal hormones is of little importance in the production of so-called stress ulcers induced by restraint.

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