formed in any department, and provides a direct measure of lipophilic \[^{99m}Tc\]HM-PAO. This method produces comparable results to the three-system chromatographic procedure and is less variable.

**References**


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**Gender-Related Differences in Gastric Emptying**

TO THE EDITOR: We have read with interest the article by Datz et al. (1) on gender-related differences in gastric emptying (GE). Their data, in fact, coincides with studies we published several years ago (2,3), despite variations in the method; as is usual among groups who investigate GE. The magnitude of the difference between males and females found by Datz, expressed in terms of T1/2 is almost identical to that we described (3); T1/2 is 1.4 to 1.5 times more prolonged in females than in males. These results are also similar to those reported recently by Hutson et al. (4)

In our work (3) we studied 18 women, the ages ranged from 18 to 27 yr, with a mean of 23 yr, who did not take contraceptives for the previous 6 mo, and all the studies were performed in the afternoon. We found a relationship between GE and the menstrual cycle, with a significant tendency to a faster GE in the ovular phase. There was no difference between the follicular and luteal phases. This finding has not been confirmed by Horowitz et al. (5), studying ten women with a wider age range (from 26 to 45 yr, with a mean of 36 yr), who had bilateral ovarian tubal ligation performed from 6 to 120 mo previously. All the studies were performed in the morning. In this study no differences was noted between the follicular and luteal phases, but the ovular period was not studied. However, there is a previous observation by McDonald (6) who described a faster GE of a liquid meal during ovulation.

Unfortunately, in their study of 15 women aged from 23 to 44 yr, with a mean of 32 yr, Datz et al. do not inform us of the phase of the subjects' menstrual cycle. The day of the menstrual cycle on which GE studies were done is necessary to ascertain the importance of a progesterone effect on GE.

Since circadian variations in GE have been observed (7), the time of the day in which the studies were performed is also relevant. Other facts that can influence GE and should be mentioned are: dietary habits of the population studied (8), fast duration (9), degree of physical activity (10), and smoking habit (11).

Early studies to investigate possible differences in GE between sexes probably failed due to technical insufficiencies, for example, fractionate liquid aspiration at 10 and 20 min only (12). There are, however, several clinical facts in gastrointestinal pathology which suggest a hormonal influence on gastrointestinal motility, e.g., the apparition of gastroesophageal reflex and biliary ectasia during pregnancy. Furthermore, sexual receptors in the stomach and gastrointestinal tract of the baboon and cobaya have been recently identified (13,14).

We agree with Datz et al. in the sense that differences in GE between sexes are due to an effect of sex hormones on gastrointestinal motility. We believe that further studies are required to ascertain the influence of the phase of the menstrual cycle, and probably of the hormonal situation related to age, on gastric motility.

The exact adjustment to a monoeXponential pattern in GE of liquids is still controversial. GE of liquids is often considered only to approximate an exponential model (15). In our study (3), such an exact adjustment to a monoeXponential pattern was only possible in nine of 50 cases; in the remaining there was a better fit to a biphasic model, with a faster first phase followed by a stationary phase. This finding has also been described by other authors (16), and seems in agreement with the effect of gravity after ingestion (described by Hunt), with the passive escape of liquids to the duodenum before mixing with solids (17), and with the noninitiation of the gastric reflex of receptive relaxation when ingestion is <1 kg (18).

GE studies using radiolabeled test meals have contributed to the knowledge of the diversity of factors that influence gastric motility. We believe that with caution when deriving conclusions, radionuclide GE studies can still offer significant contributions to gastroenterology.

**References**

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