LETTERS TO THE EDITOR

Pressure-volume characteristics of the rectum

Sir,—The paper by Kendall and colleagues (Gut 1990; 31: 1062–8) raises several methodological problems. Digital rectal examination alone is not sufficient to ensure that the whole rectum and lower sigmoid colon is devoid of faeces. We recommend the use of a paediatric sigmoidoscope without insufflation to ensure an empty viscus before embarking on a proctometrogram.1 In support of this we have radiological evidence that the proctometrogram balloon expands into the upper rectum and lower sigmoid during distension. The presence of faeces in the upper rectum could appreciably alter the characteristics of a proctometrogram. Furthermore, no information is provided about the level of balloon placement in the rectum.

In our experience the proctometrogram balloon never empties completely upon deflation and hence retains variable but appreciable amounts of perfusion fluid at the end of a study while still in the rectum. Repeated distensions at five minute intervals as described in their study may therefore be subject to inaccurate interpretation as this variable residual amount is not accounted for. The use of a fluid perfused system to measure intraballloon pressure is subject to well known error which was encountered by the solid state microtransducer system used in our study.

The frequency of the irritable bowel syndrome is such that these patients may have inadvertently been included in the normal subject group. It is now also known that subtypes within irritable bowel syndrome differ greatly in their manometric manifestations.2 The comparisons between irritable bowel syndrome patients and control subjects furthermore may not be relevant as the groups were not matched for age or sex. The inclusion of six patients with prior hysterecomy in the irritable bowel syndrome group could further invalidate the comparison as this operation can result in motility disturbances of the colon and rectum.

These various considerations will influence the acquisition and interpretation of data obtained from proctometry. In a study by H Nyhlin (personal communication) 11 patients with irritable bowel syndrome were compared several days after the hysterecomy and there was no influence on colorectal motility. The rectal compliance measurements of the studies were 4-6 (0-92) and 4-4 (0-46) ml cm H2O (mean (SEM)); 95% confidence intervals –2-3, 1-9; not significant). The normal range for the same laboratory is 8-7 (0-4) ml cm H2O.

In our experience functional abnormalities not detectable by other means have been brought to light by the proctometrogram.3 Out of the 10 patients studied, reproducibility has been substantiated by Sun et al who also suggest that rates of inflation can influence the results obtained.

7 Kendall et al2 based their results on analysis of only 10 normal volunteers. With a small number of subjects, standard deviation could be very much affected by a single unusual subject. This could have the effect of extending the apparently normal range to include patients with irritable bowel syndrome.
8 The maximum rectal volume that the subject could tolerate would alter with confidence and experience of the subject. It may, for example, increase as a nervous subject becomes more confident with the procedure, but conversely it is possible that of an initially more phobic subject experienced pain on the first distension. Such factors would not apply to other sensory or motor indices of rectal distension. Indeed, on looking at the profiles in Figure 1 and also some of the data in Figure 6, one is struck by the reproducibility of successive tests in Kendall’s study. It could be that the index that he and his colleagues have chosen is the least reproducible.
9 Table 1 should indicate the majority of the patients had constipation and would therefore be considered a biased sample of irritable bowel syndrome patients. Some may not fulfil the criteria of irritable bowel syndrome, used by other centres, and would be better characterised as idiopathic constipation. There are a number of patients with constipation after hysterectomy. Indeed, it is interesting that only two patients presented with diarrhoea, and both of these had rectal sensitivity – patients 4 and 24. Both our study and Whorwell’s study suggested that rectal sensitivity was a feature of patients with a frequent desire to defecate (their observations).4
10 Kendall et al do not state in their methods whether the rectal tube was placed in exactly the same position on every occasion. The responses to rectal distension may vary con- siderably according to the position of the balloon.
11 Physiological systems adapt to stimuli. It is therefore likely that the gap between successive rectal distensions may have been too short to allow the rectum to return to its original basal condition, resulting in poor intra-subject variability.
12 Biological systems always show some vari- ability that is difficult to control for. Kendall et al propose that the noise induced by intra-subject and intra-subject variation invalidates the use of the proctometrogram as a clinical test. That is certainly not our experience, nor is it the experience of others. We find the test extremely useful in identifying a subset of irritable bowel syndrome patients with an abnormally sensitive rectum. We believe that the conclusions may have been different had Kendall et al had considered some of the important methodological factors listed above.
13 Finally, we have recently shown that ramp distension of the rectum over the range 10 to 100 ml/minute produced graded responses in rectal sensitivity and pressure. These data are also contrary to the findings of Kendall et al.

Reply*

Sir,—We thank Varma and Smith, and Sun and colleagues for their letters in reply to our article and are happy to reply to the points that they have made.

A major difficulty in studying such pressure-volume relations lies in knowing what end points to use. In our studies we defined our end points defined previously by other workers — namely, ‘onset of an awareness of the sensation of distension’ and the ‘limit of tolerability’ of the sensation. Ten healthy symptom free volunteers then underwent repeated rectal distensions over several days at different rates to define inter and intra-individual variability. We subsequently compared this information with data derived from a group of patients defined by us as having the irritable bowel syndrome and were unable to find any differences between the patient and control group.

Varma and Smith first criticise us for failing to inspect the rectum and lower sigmoid before each study, which we do, and are happy to produce the results that we found.

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