Rectal motor activity

Sin.—We were interested to read that Prior et al (Gut 1991; 32: 1360–3) have confirmed the existence of nocturnal periodic motor activity in the rectum, first reported from our laboratory and subsequently confirmed at the Mayo Clinic.2 We were also gratified to note that they have confirmed our findings,1 published two years ago, that there is no temporal relationship between the rectal motor complex and the small intestinal migrating motor complex, but confess to surprise that our work is not cited.

We would concur with their conclusion that the rectal motor complex is a segmental rather than a propagated phenomenon. Our study was not designed to detect propagation of the rectal motor complex, because we were unaware of its existence when we designed our study. We could infer that the rectal motor complex was not propagated over any significant distance from the fact that it had not been previously detected in numerous previous studies of distal colonic motor activity, and that it is only apparent when sensors are carefully located in the rectum. They report greater variability in rectal motor complex incidence than has been found by others, but have not addressed the question of whether the difference might have been the result of the differences in recording technique. In our studies, we used a solid state recording system which enabled our subjects to go home, eat a meal of their own choice, and sleep in their own beds. Their subjects had to stay overnight in hospital; after the insertion of a rectal probe at 10 pm, and connection to a pneumohydraulic pump, they ‘... were allowed to fall asleep in a semidarkened room.’ From our experience with the study of nocturnal small bowel motor activity, we know that the nocturnal pattern is most evident in subjects who are able to sleep normally at home, and are therefore as little stressed as possible; the same may be true for the rectal motor complex.

We had assumed that the term ‘rectal motor complex’ had acquired a degree of legitimacy as the term was first used in the title of a report which was the very first paper to appear in another journal of which Professor Read is joint editor, but evidently he has had second thoughts on the matter. Prior et al doubt whether the rectal episodes deserve to be described as ‘motor complexes’. They support their argument by suggesting that ‘the contractions and the nocturnal pattern are both observed by other workers in the human transverse, descending and sigmoid colon’, we can find no report of such activity during sleep in the paper they cite, ‘... but only a comment to the effect that ‘... sleep is nearly always associated with a sharp inhibition of motor activity’. In a study from our own laboratory2 involving prolonged ambulant manometry in the unprepared human colon, we found the colon to be almost inert during the night, and observed nothing that resembled the rectal motor complex. We do not believe that migration or propagation is implied in the term ‘complex’, and certainly the phenomenon of disruption by food is irrelevant because this does not occur in the ruminant migrating motor complex. We contend that the rectal motor complex is a periodic biorhythm, and that such biorhythms seem to characterise neural command networks in the absence of sensory arousal. The use of the term ‘complex’ relates to the periodicity; for the small intestinal migrating motor complex, ‘migrating’ is added as a qualifying adjective.

Finally, the variability of the rectal motor complex leads Prior et al to speculate ‘... that monitoring of rectal activity is unlikely to be of value in the assessment of the intrinsic nervous system of patients with anorectal dysfunction’. Almost certainly this is true with regard to the periodicity of the event; similar hopes about monitoring human migrating motor complexes were dashed when the variability of the human migrating motor complex compared with the laboratory dog was shown3. This does not invalidate the case for monitoring human rectal motor activity, as it has been shown5 that in patients with chronic intractable constipation, while the incidence of rectal motor complexes is not altered, the mean amplitude of rectal motor complex contractions is significantly (p<0.001) reduced from 42.4 (2-1) to 9.2 (0-7) mm Hg (means (SEM)).

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Colonic manometric tracing showing sporadic contractions (tracings 1–3), and non-propagated bursts of contractions (tracings 4–6). Recording points are (from the top) in the proximal and distal transverse, the proximal and distal descending, the mid sigmoid colon, the rectosigmoid junction and the rectum. The event marker showing one minute recording every little bar.

Although the recording period was on average about six hours, the study of Prior et al confirmed our previous experience with 24 hour recordings,4 showing that even in its very distal segments the colon does not display any cyclic activity, and contractile activity resembles that seen in more proximal portions (Fig). The physiological function of the bursts of contractions sporadically seen in the rectum is unknown. We have recently shown that in women with slow transit constipation such activity is heavily decreased during 24 hour recordings,5 together with an extremely blunted rectal bowel response to eating. Similar findings have also been reported by Waldron et al,6 and a rectal neuropathic process has been suggested as the pathophysiological ground for these abnormalities.

The fact that Prior et al were not able to identify high amplitude propagated contractions, the manometric equivalent of mass movements,10 is not surprising. In fact, apart from the relatively brief recording period of their study, high amplitude propagated contractions are rarely, if ever, seen below the rectosigmoid junction, as this motor phenomenon is subject to a physiological ‘fading’ in the distal colonic segments.8 Moreover, high amplitude propagated contractions are more likely to occur after specific events such as awakening in the morning and meals.

In conclusion, Prior et al are to be congratulated on their interesting study, which adds another piece to the puzzle of human colonic motility. Further work is, however, necessary to highlight the still hidden secrets of the motor aspects of this interesting viscus.

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References


Rectal motor activity

Sin.—We read with interest the study of Prior et al (Gut 1991; 32: 1360–3), in which they recorded rectal motor activity from multiple sites in healthy volunteers. We feel this investigation deserves some comments.

Three recent studies have reported the presence of recurrent bursts of contractions occurring in the rectum,11 and two of them proposed, in analogy with the phase III of the small intestinal migrating motor complex, the term rectal motor complex to define this kind of activity.12 We agree with Prior et al, however, that there is no experimental evidence supporting the formalisation of this term, as none of the studies aimed at correlating small bowel and recurrent rectal activity was successful.13,14
Rectal motor activity.

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