Colonoscopy aided by magnetic 3D imaging

Are there important differences between male and female patients?

1Bell GD, 2Rowland RS, 3Dogramadzi S, 4Allen C

1Faculty of Medical Sciences, Sunderland University, 2RMR Systems Limited, Kirton, Suffolk, 4Dept of Electrical and Electronic Engineering, Newcastle University

Introduction

Endoscopic examination of the colon tends to be more difficult in women than men (Marshall 1996, Saunders et al., 1996) and, in the case of flexible sigmoidoscopy, the mean insertion depth is less and the pain rating significantly greater in women (Maule 1994).

Our group have been using a non-radiological method for real time 3D imaging of the endoscope around the colon for the last 6 years (Bladen et al., 1993). Recent improvements to the system include the facility to measure the length of any segment of the colonoscope as it is passed around the bowel (Rowland and Bell 1998, Rowland et al., 1999).

We were interested to see if we could confirm the barium enema studies of Sadahiro et al., 1992 and Saunders et al., 1996 showing that women tend to have longer colons than men and that most of this difference could be explained by the fact that the female transverse colon was on average about 8 cm longer.

Method and patient groups studied

All 232 total colonoscopies were carried out by one experienced endoscopist (GDB) with the aid of the Bladen magnetic imaging system. There were 156 patients in Group I (76 male and 80 female), endoscoped without the aid of a stiffening overtube and 77 patients in Group II (40 male and 37 female) in whom an overtube was used to splint the sigmoid colon.

The formation of any loops in the sigmoid colon was noted once 50 cm of endoscope had been inserted and that these differences were most marked in the transverse colon.

In Group I, the mean time to traverse the transverse colon from the splenic flexure to the hepatic flexure was 254.1 seconds for males and 307.4 seconds for females (Mann-Whitney U test, p = 0.0099). In Group II patients, the mean time for males was 102.7 seconds and for females 116.5 seconds (Mann-Whitney U test, p = 0.0009).

Discussion

These observations may, in part, help to explain why endoscopic examinations of the large intestine are more difficult in women.

Our results confirmed the barium enema findings of Sadahiro et al., 1992 and Saunders et al., 1996 that the female colon tended to be slightly longer than the male and that these differences were particularly marked if an overtube was used to splint the left side of the colon. Furthermore, the time taken to pass the colonoscope across the transverse colon tended to be slightly longer in women than men.

In the present study (Table 2a) pelvic loops tended to occur significantly more frequently in female patients (p = 0.005). As can be seen from Table 2b, when 50 cm of endoscope had been inserted, the mean score for male patients to be less prone to pelvic loop formation than females. In addition, the endoscopist tended to have progressed further around the bowel in male than female patients. If a score of 4 or 5 was compared then 40/116 or 34.5% of females achieved this point but only 24/117 or 20.5% of females (p = 0.0137).

Table 2a - Formation of loops when 50cm of colonoscope inserted

<table>
<thead>
<tr>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>no loop</td>
<td>18</td>
</tr>
<tr>
<td>N-loop</td>
<td>34</td>
</tr>
<tr>
<td>Alpha loop</td>
<td>47</td>
</tr>
</tbody>
</table>

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As can be seen from Table 2a, there was a tendency in terms of position tip was significantly better in men than women with 34.5% of males but only 20.5% of women getting a score of 4 or 5 (p = 0.0137).

Results

There was no statistically significant difference between male and female patients in the length of colonoscope inserted into the rectum, sigmoid colon or descending colon to reach the splenic flexure (see Figure 3).

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Acknowledgements

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References


Sadahiro S, Ohbana T, Yamada Y (1992): 'Analysis of length and surface area of each segment of the large intestine according to age, sex, and physique' Jpn Red Cross Med. J., 16:251-7.