Dyspepsia in coalminers and the general population: a comparative study

J D HARRISON, D L MORRIS

From the Department of Surgery, Queen's Medical Centre, Nottingham NG7 2UH, UK

Coalminers have an increased incidence of gastric cancer\(^1\)\(^2\) with an overall excess mortality of 30–50%, rising as high as fivefold in parts of south Wales.\(^3\) If screening for gastric cancer is to be cost effective in the West high risk groups will probably need to be identified and if dyspepsia is to be used to identify a particularly high risk group, such as coalminers, then we must know the rate of dyspepsia in the group we are studying and the extent to which it differs from the general population. We have therefore studied a group of coalminers and an age and sex matched group of subjects from the general population to see if the rates of dyspepsia differ between the two groups with a view to screening this high risk group for gastric cancer.

Patients and methods

A group of 670 coalminers aged 50–75 was identified from the records of the North Nottinghamshire Miners' Pension Fund and a group of 743 age and sex matched non-coalmining subjects was identified from general practitioner records in three participating practices. A self administered questionnaire on upper gastrointestinal symptoms was sent to the subjects in each group with a reply paid envelope. A reminder letter and questionnaire was sent six weeks later to subjects who had not replied.

The signatory of the letter to the miners was the president of the Union of Democratic Mineworkers and for the controls the patient's general practitioner. The letter and questionnaire were kept as simple as possible. The questionnaire included six questions about upper gastrointestinal symptoms: loss of appetite, loss of more than 6 kg in weight, difficulty in swallowing, epigastric pain, heartburn, and vomiting. Also included were inquiries about previous gastric surgery and use of tobacco (including tobacco chewing in the questionnaire to the miners). The relative proportions of each of the responses were compared using the \(\chi^2\) test.

Results

Altogether 569 (76.6%) of the general population and 516 (77%) of the miners replied. There was no significant difference in response rate to the questionnaire according to age, taking five year intervals from 50–75 in each group (\(\chi^2 = 7.30\), DF = 9, NS). Of those who replied, 195 miners were positive for at least one symptom and 172 were positive in the general population group (\(\chi^2 = 5.88\), \(p < 0.05\)).

Comparing each of the symptoms (table 1), significantly more miners complained of anorexia and weight loss, whereas similar numbers in both groups complained of dysphagia, epigastric pain, heartburn, and vomiting. Significantly more miners had had gastric surgery for benign disease and significantly more miners smoked than the general population. As a corollary of this, there were significantly more ex-smokers in the general population group. Few miners continue to chew tobacco after they retire (14–2.7%), but this habit was common when they worked when 139 (27%) miners took tobacco in this form either solely or in conjunction with smoking (table 2).

Discussion

Most published data (including those of the Registrar General for England and Wales) support the conclusion that coalminers have an average excess mortality for gastric cancer of approximately 50%, rising to fivefold in some regions\(^4\)\(^6\); some studies have failed to show this excess.\(^7\) There have been several hypo-

<table>
<thead>
<tr>
<th>Symptom</th>
<th>General population ((n = 569))</th>
<th>Miners ((n = 516))</th>
<th>(\chi^2)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia</td>
<td>14</td>
<td>43</td>
<td>17.54</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Weight loss</td>
<td>8</td>
<td>37</td>
<td>21.15</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>15</td>
<td>25</td>
<td>2.98</td>
<td>NS</td>
</tr>
<tr>
<td>Epigastric pain</td>
<td>84</td>
<td>88</td>
<td>0.77</td>
<td>NS</td>
</tr>
<tr>
<td>Heartburn</td>
<td>135</td>
<td>138</td>
<td>0.35</td>
<td>NS</td>
</tr>
<tr>
<td>Vomiting</td>
<td>25</td>
<td>33</td>
<td>3.45</td>
<td>NS</td>
</tr>
<tr>
<td>Previous gastric surgery</td>
<td>25</td>
<td>46</td>
<td>8.47</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

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Table 2  Tobacco habits

<table>
<thead>
<tr>
<th>Symptom</th>
<th>General population (n = 569)</th>
<th>Miners (n = 516)</th>
<th>χ²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current smokers</td>
<td>160</td>
<td>201</td>
<td>14.90</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Ex-smokers</td>
<td>285</td>
<td>215</td>
<td>6.49</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Tobacco chewers</td>
<td>—</td>
<td>14 (2.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ex-chewers</td>
<td>—</td>
<td>139 (27%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although the response rate to our questionnaire was relatively low, there was no evidence that the responding group differed from the non-responders, so it seems unlikely that bias could be introduced as a result of any disparity between the groups. We have found that coalminers complain more frequently of anorexia and weight loss, have a higher prevalence of previous gastric surgery, and have a higher proportion of smokers than an age and sex matched group of the general population. These findings could help to explain the higher incidence of gastric cancer among coalminers and we would suggest that they would be a suitable group to screen for gastric carcinoma using an upper gastrointestinal symptom questionnaire.

We are grateful to the Cancer Research Campaign for funding this research and to the management of the Union of Democratic Mineworkers, the North Nottinghamshire Miners’ Pension Fund, and the Nottinghamshire general practitioners for participating in the study.

References

Dyspepsia in coalminers and the general population: a comparative study.
J D Harrison and D L Morris

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