Endoscopic investigation for gastric cancer in a high-risk group


Summary

Early gastric cancer (EGC) was diagnosed in only a small percentage (< 1%) of gastric cancer cases seen at Tygerberg Hospital over a 10-year period (1976 - 1985).

This study, aimed at increasing the yield of EGC, was conducted in some high-incidence areas for gastric cancer. Coloured men, who are at high risk for gastric cancer, were identified by their medical practitioners and investigated. A total of 272 coloured males with nonspecific foregut symptoms underwent upper gastro-intestinal endoscopy and multiple biopsy specimens were obtained from all localised mucosal lesions.

Twelve gastric cancers were histologically verified, of which 11 were diagnosed in males over 40 years of age. Two EGCs were diagnosed in older males, resulting in a markedly higher proportion of EGC in this subgroup (18.2%) than the proportion of EGC in inpatients at our institution (0.9%).

Twenty-two per cent of males over 40 years of age had gastric ulcers compared with 9.2% of younger males. Chronic atrophic gastritis was present in 56.2% of older males but in only 24.6% of younger males. Those over 40 years of age emerged as a subgroup with a high prevalence of gastric cancer and EGC, and concomitant conditions.

Despite the global decline in the incidence of gastric cancer, this malignancy has a significant impact on certain countries which have high incidence rates, especially Japan. A distinct pattern of intra-country variation in the mortality rate from gastric cancer prevails within the RSA. The highest mortality rate from this malignancy (42/100 000) occurs in coloured males (i.e. those of racially mixed descent). South African coloured males have the fourth highest mortality rate from gastric cancer in the world.

In the RSA gastric cancer is the most common gastro-intestinal malignancy found in coloured males and the second most common overall cause of cancer death in this group after bronchial carcinoma. At Tygerberg Hospital (TBH) 47.6% of all gastric cancer cases are seen in coloured males. Between 62% and 71% of gastric cancer cases at Groote Schuur Hospital, Cape Town, and 63.4% of cases at TBH occurred in coloureds of both sexes. Furthermore, a proportionate increase in coloured gastric cancer cases compared with whites has been perceived over a period of time at TBH.

Regional mortality rates have been mapped out for the RSA. In certain areas of the Cape Province, with access to major referral centres like TBH and Groote Schuur Hospital, mortality rates for coloureds and whites exceed the national average. The proportion of early gastric cancer (EGC) cases at TBH over a 10-year period (1976 - 1985) was less than 1% (4/435). The comparable proportion at Groote Schuur Hospital is 3.6%. The very low prevalence of EGC at TBH, the impact of cancer of the stomach on a segment of our population in well-circumscribed areas of the country and the poor prognosis associated with this malignancy, urged us to embark on the selective examination of individuals at high risk for gastric cancer in some high-incidence areas of the Cape Province. In order to delineate the target population even better, the individual at high risk was further defined as having nonspecific foregut symptoms.

Patients and methods

The high-risk individual was defined as a coloured male over 40 years of age. This definition was decided upon as the majority of gastric cancer cases were coloured males in their 6th decade. Circumal regions were mailed to general practitioners practising in towns in some of the high-incidence areas we intended visiting, urging them to refer high-risk individuals with nonspecific foregut symptoms for upper gastro-intestinal endoscopy and biopsies. Selection of patients for endoscopy by physicians was subjective and not according to strict guidelines, save for the recommendations given in the circular.

As this was a feasibility study, the recruited patients...
constituted a 'chunk' sample rather than a random one. Day visits were made to three rural hospitals situated within a 100 km radius of TBH, and a single visit was made to nine additional towns in the northern part of the Cape Province and on the West Coast. All venues were located in high-incidence areas and served rural or semi-rural communities.

Five hundred and thirty-four successful endoscopic examinations were performed between June 1987 and October 1988. Patients recruited comprised 458 coloureds, 49 whites, 25 Asians, 1 black and 1 patient of undetermined race. As the focus of the study was on coloured male patients over 40 years of age, analysis of results was confined to this group. Females and individuals of other races were also examined as a service to the community, but for the purpose of this study the results will not be included. The study sample therefore consisted of 130 males 40 years of age and older, and of 142 males younger than 40 years.

The mean age of males was 43.68 years (SD 14.63) and the majority (77.5%) were unskilled labourers. The mean duration of symptoms was 4.2 years (median 2.0 years). The prevalence of symptoms was as follows: epigastric pain (81%), heartburn (63%), dyspepsia (62%), loss of weight (60%), nausea (57%), loss of appetite (52%), vomiting (43%) and dysphagia (18%).

All patients admitted to the study had to fast overnight. They were informed of the purpose and method of the study and their consent was obtained in writing. Endoscopic examination of the oesophagus, stomach and first part of the duodenum was performed with an Olympus XQ-10 end-view endoscope after application of 1% lignocaine spray to the oropharynx. Intravenous sedation was rarely required. All examinations were performed by the same observer (H.D.L.), which excluded the possibility of interobserver variation. The only morbidity associated with endoscopy was severe abdominal cramps in 1 patient provoked by air in the intestine. Symptoms subsided after administration of an intravenous antispasmodic agent and a period of bed rest. There was no mortality due to endoscopic examination.

Eight biopsy specimens were taken from all mucosal lesions suggestive of types I - III EGC. Additional specimens were taken from other predetermined sites to ascertain the prevalence of concomitant gastritis. Various lesions observed on endoscopic examination of the mucosal surface included ulcers, erosions, suspected cancer, polyps, suspected gastritis or scars. All tissue specimens were immediately fixed in 10% neutral formalin and later embedded in paraffin blocks. Semi-serial microtome sections were stained with haematoxylin and eosin, periodic acid-Schiff and alcian blue for neutral and acid mucins, and high-iron diamine for sialo- and sulphomucins.

Histological interpretation of all specimens was undertaken by one of the authors (K.J.). All patients with histologically confirmed adenocarcinoma of the stomach, including microscopically suggestive EGC, were admitted to hospital for gastrectomy when possible. EGC was diagnosed on resection specimens when malignant changes were restricted to the mucosa and submucosa. The chi-square test was employed to determine statistical significance in the case of categorical data.

<table>
<thead>
<tr>
<th>TABLE I.</th>
<th>Prevalence of gastric mucosal lesions other than cancer</th>
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<tbody>
<tr>
<td>Lesion</td>
<td>&lt; 40 years</td>
</tr>
<tr>
<td>Gastric ulcer</td>
<td>13</td>
</tr>
<tr>
<td>Suppurative gastritis</td>
<td>38</td>
</tr>
<tr>
<td>Chronic atrophic gastritis</td>
<td>35</td>
</tr>
<tr>
<td>Erosion</td>
<td>4</td>
</tr>
<tr>
<td>Scar</td>
<td>3</td>
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<tr>
<td>Polyp</td>
<td>3</td>
</tr>
</tbody>
</table>

Discussion

The publication by Saeki in 1938, in which he describes the relationship between postoperative survival and depth of tumour infiltration, prompted interest in gastric cancer confined to the superficial layers of the stomach. Five-year survival has since been widely reported in more than 90% of patients with EGC after partial gastrectomy. The survival rate of patients with gastric cancer has remained unchanged in most countries, but a marked improvement has been reported in Japan. This improvement was due to a large percentage of patients with EGC (up to 60%) having been detected in mass screening programmes.

In the RSA coloureds, particularly coloured males, have emerged as the subgroup most afflicted by gastric carcinoma. This study was undertaken to ascertain whether a selective survey would assist in increasing the yield of EGC in a particular subgroup of people. Mass screening is not indicated in this country as gastric cancer is not a major cause of death among South Africans.

Our recruited patients were on average 10 years younger than the mean age of gastric cancer cases at our
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REFERENCES


Age at menarche and the weight-for-height index

N. H. NG'ANDU, T. E. E. WATTS, S. SIZIYA

Summary

The use of nominal and adjusted weight-for-height values using Tanner-Whitehouse standards and US National Center for Health Statistics (NCHS) standards was evaluated in a sample of 800 black rural primary school children aged 12 - 17 years. The study showed that nominal weight-for-height values for adolescents need adjusting for pubertal physiological developments when using Tanner-Whitehouse standards or NCHS reference series. It is suggested that in nutritional studies involving adolescents, especially in developing countries, the age at menarche be determined to ensure accurate calculation of the weight-for-height index and correct classification of children by the index, and that researchers should mention in their methodology whether the weight-for-height values presented are nominal values or adjusted values.

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