ELECTROCARDIOGRAPHIC MONITORING DURING UPPER GASTRO-INTESTINAL ENDOSCOPY IN YOUNG MEN

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SUMMARY: Seventy-four men between the ages of 18 and 39 years (mean age 25.8 years) undergoing gastro-intestinal endoscopy were electrocardiographically monitored in order to ascertain whether significant cardiac arrhythmias occurred during the procedure.

Sinus bradycardia was noted in six patients (8.1 per cent) during intubation and ventricular ectopics were noted in one patient. These changes were not considered to be significant.

Introduction

The various methods of examination of the gastro-intestinal tract are not without hazards. The British Society for Digestive Endoscopy (BSDE) Study (1972) found the incidence of complications of upper gastro-intestinal endoscopy to be one in nine hundred examinations. Cardiac arrhythmias have been noted during examinations with the rigid endoscope at oesophagoscopy, during barium enema examinations and during sigmoidoscopy. Bennet¹ reviews these and quotes a study which gives figures for cardiac arrhythmias during upper gastro-intestinal endoscopy of 82 per cent in patients with ischaemic heart disease and 48 per cent in patients with normal hearts. In the 1972 BSDE study there were five serious cardiovascular complications in the group, including three deaths, but these may not have been related to the actual endoscopic procedure.

In view of these figures it was considered worthwhile to study the incidence of electrocardiograph (ECG) abnormalities in young men undergoing gastro-intestinal endoscopy.

Patients and methods

The seventy-four patients included in the series were attending routine endoscopy sessions. The majority (89 per cent) were being assessed for duodenal ulcer disease. One of the authors (DM) was responsible for placing the electrodes (V-trace chloride electrodes) and monitoring was performed using the Royal Air Force patient monitoring system (PMS Type 5). The ECG pattern was observed throughout the procedure and rhythm strips were taken of any abnormalities noted for later analysis.

Local anaesthetic spray (Xylotox, equivalent to approximately 40 mg lignocaine and 0.2 mg cetrimide) was applied to the back of the throat, and all patients received diazepam 10 mg slowly intravenously. No other medications were given. All endoscopies were performed using the Olympus GIF P2.

Results

All patients were in sinus rhythm before the procedure. During intubation the heart rates varied between 65 and 150 beats per minute (bpm) (mean 103 bpm). This sinus tachycardia mainly related to anxiety. During extubation the heart rates had

fallen significantly to between 115 and 60 bpm (mean 93 bpm). The six episodes of sinus bradycardia (below 60 bpm) occurred in the younger patients (mean 23 years) and lasted from two to a maximum of six cardiac cycles. One patient had had three benign ventricular ectopic beats on intubation. No abnormalities of the ST segment or T waves were recorded.

Discussion

Our results do not suggest that significant ECG abnormalities occur in fit young men undergoing routine upper gastro-intestinal endoscopy. Fletcher and colleagues² who monitored 100 patients undergoing sigmoidoscopy found that the development of, or increase in, ectopic beats was significantly more frequent (40 per cent) in patients with heart disease, compared with patients without clinical evidence of heart disease (17 per cent). They were surprised to find that bradycardia, suggesting reflex increase in vagal tone, was the least frequently encountered change. However, in upper gastro-intestinal endoscopy, this was the only significant ECG change encountered by us.

Rhythm disturbances and repolarisation abnormalities during upper gastro-intestinal endoscopy are much more common, and potentially serious, in patients with established heart disease. The rhythm disturbances include atrial tachycardia, atrial fibrillation, atrioventricular block, bundle branch blocks and nodal escape. Libor and colleagues³ reported on ECG disturbances in 102 patients with cardio-respiratory diseases (in which they include pulmonary emphysema, respiratory insufficiency and cardiac ischaemia). Of these the ECG during endoscopy showed rhythm disturbances in 21.2 per cent and repolarisation disturbances in 36.2 per cent. In conclusion potentially serious ECG changes during upper gastro-intestinal endoscopy may occur in patients with cardiorespiratory disease, but have not been found by us in fit young men.

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