Bacteraemia and upper gastrointestinal fibre-endoscopy[1]

A Kirk[2] MB MRCP **R Graham-Brown**[3] MB MRCP
R M Perinpanayagam MRCPath
R G Smith[4] MB BS **D E Barnardo** MD FRCP
Queen Mary's Hospital, Roehampton, London SW15

Introduction

Transient bacteraemia has been described in association with a number of procedures including dental surgery (Berger *et al.* 1974), manipulation of the genito-urinary tract (Sullivan *et al.* 1972), nasotracheal intubation (Berry *et al.* 1973) and sigmoidoscopy (LeFrock *et al.* 1973).

Especially in dentistry and genitourinary surgery, prophylactic antibiotic regimes are recommended for patients with evidence of cardiac abnormalities.

Upper gastrointestinal endoscopy is now a widely-used diagnostic tool and involves manipulation of the mouth and pharynx and of any lesion found. In view of this we have attempted to ascertain whether there is a significant risk of transient bacteraemia during endoscopy.

Methods

A series of 52 consecutive patients undergoing fibreoptic endoscopy were studied. The instrument used was the ACM F8 and was passed by one of three experienced regular endoscopists. Informed consent was obtained from all patients included in the study. We excluded from the study patients with any of the following: overt infection; pyrexia; indwelling intravenous lines or urinary catheter; a history of antibiotic treatment within the preceding fourteen days. From each patient a full history of previous illness was noted, and the state of the teeth was assessed and recorded.

In each patient the oesophagus, stomach and duodenum were examined and biopsies were taken where indicated. Brushings were taken from all lesions found, and these were washed into normal saline and cultured.

The brushes used were boiled in a sterilizer for ten minutes after use. The endoscope was washed with water, activated glutaraldehyde and isopropyl alcohol between patients.

Blood cultures were taken with full aseptic technique, using separate venepunctures. This was done before endoscopy, during the initial passage of the instrument, and fifteen minutes later. All blood taken was cultured for both aerobic and anaerobic bacteria. The culture media used were Castenada's (aerobic + CO_2) and Brewer's thioglycollate (anaerobic) (Southern Group Laboratories).

These media were incubated for 14 days and were examined daily for visible growth. On alternate days subcultures were made on 4% blood agar plates which were then incubated aerobically and anaerobically with added CO_2 for 4 days.

A significant result was taken to be the isolation of one or more organisms in both bottles of a set.

Results

In the 52 patients examined, 31 upper gastrointestinal lesions were found (Table 1). Twelve patients had underlying diseases including arthritis (3), diabetes mellitus (3), past tuberculosis (2), and alcoholic cirrhosis (1).

[1] Accepted 10 July 1978
[2] Present address: St Mark's Hospital, City Road, London EC1V 2PS
[3] Present address: Department of Dermatology, Royal Free Hospital, London NW3
[4] Now deceased

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Table 1. Upper gastrointestinal lesions found at endoscopy

Lesion	Number found
Gastric ulcer	9
Duodenal ulcer	6
Gastritis	5
Hiatus hernia/oesophagitis	5
Prepyloric ulceration	2
Oesophageal varices	1
Gastric carcinoma	1
Gastric diverticulum	1
Extrinsic pressure on oesophagus	1

There was no evidence of bacteraemia in any of our patients. The majority of blood cultures remained sterile throughout the 14-day incubation period. A total of six individual bottles (four from the pre-endoscopy sample) in some sets of cultures grew *Staphylococcus epidermidis* or diphtheroid bacilli, and in one case *Staphylococcus aureus* was grown. However, all growth occurred towards the end of the 14-day incubation period, and after several subcultures had proved sterile; they were therefore considered to be the result of laboratory contamination by the sampler and were disregarded.

There was only one lesion from which the brushings produced any bacterial growth. This was a gastric ulcer. *Klebsiella oxytoca* and *Streptococcus faecalis* were the organisms, but neither was isolated from the appropriate blood cultures.

Half of our series of patients (26) had teeth of their own. Some (12) had false teeth as well as some original teeth. Of those with their own teeth, three were described as good, twelve as moderate and eleven bad.

Discussion

Previous studies searching for transient bacteraemia in upper gastrointestinal endoscopy have been somewhat contradictory. Two published series have found an incidence of 8% (Shull *et al.* 1975, Baltch *et al.* 1977), and one, 3% (Mellow & Lewis 1976). On the basis of these findings a firm recommendation has been made that chemoprophylaxis should be given to patients with prosthetic heart valves (Everett & Hirschmann 1977). One other series (Liebermann 1976) found no significant bacteraemia.

In our series there was no evidence of transient bacteraemia, despite long aerobic and anaerobic culture and subculture. This was in spite of underlying illnesses such as diabetes and rheumatoid arthritis.

Fatal septicaemia has occurred in leukaemic patients due to patient contamination by the endoscope (Greene *et al.* 1974), but so far no cases of subacute bacterial endocarditis have been described following upper gastrointestinal endoscopy.

Our findings suggest that transient bacteraemia is not a significant risk, and there remains much doubt as to the necessity of prophylaxis against subsequent endocarditis in supposedly susceptible patients.

Summary

A prospective study of fifty-two patients undergoing fibreoptic upper gastrointestinal endoscopy was carried out in order to determine whether bacteraemia was a significant risk. Aerobic and anaerobic blood cultures were performed before, during and after endoscopy. Cultures were also taken from lesions (if any found) in the oesophagus, stomach or duodenum.

No significant bacteraemia was identified, and bacterial growth was found in only one upper gastrointestinal lesion.

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