ratio of the difference to its standard error exceeds 2, and the decrease in the second period may therefore be regarded as a real one.

Discussion

The objective of the analysis was to ascertain whether or not the two series of patients were similar in all respects except as regards treatment and to make allowances for differences which might be found. The results show similarity in regard to parity and type of operation, but dissimilarity in regard to age and indication. While the conclusion must be that the "paralytic ileus" rate was lowered after morphine therapy started, the statistical analysis can only be claimed to show that the decrease was greater than could easily be ascribed to chance and that it was not due to inherent differences in the two series as regards age, parity, and type of operation or indication.

Conclusion

The essential difference between the two series of cases from the clinical point of view is the introduction of a morphine routine in the second group, and we feel that the results (5% paralytic ileus as against 0.88%) are attributable to this factor, as the two series are as near parallel as can be expected in 500 consecutive Caesarean sections.

We wish to express our indebtedness and thanks to Dr. E. Lewis-Fanning, of the Medical Research Council's Statistical Staff, for the statistical analysis and comments, without which this paper could not have been written. We also thank Dr. W. J. Clancy for his help and co-operation in this subject for some years past, and Dr. J. Rennie and Dr. J. Clark for permission to publish this article.

ACID-FAST ORGANISMS IN GASTRIC RESTING JUICE

BY

JOHN YATES, M.B., B.S.

Formerly Demonstrator of Pathology and Bacteriology, Guy's Hospital Medical School

This investigation was undertaken after a physician had remarked that he occasionally had acid-fast organisms reported in the gastric juice of patients when he was certain that the tubercle bacillus was not present in the patient's sputum.

The Investigation

Technique.—The specimens of gastric resting juice were obtained from out-patients attending Guy's Hospital for fractional test meals. None of them were known or suspected to be suffering from tuberculosis. Each specimen was treated with antiformin, and smears were made and stained by the Ziehl-Neelsen method, decolorization being carried out with both 25% sulphuric acid and 90% alcohol. The smears were each subjected to a ten-minute microscopical search for acid-fast bacilli. When these were found the neutralized and washed centrifugalized deposit was planted on Loewenstein's medium and incubated at 37° C. for at least six weeks, and a portion of the deposit was also injected into a guinea-pig.

Findings.—171 specimens were examined. In seven of them acid-fast organisms were seen. None of the seven showed more than two or three such organisms per slide in a prolonged search. They were mostly of a short and stout shape, unlike true tubercle bacilli, and often had a ragged deformed appearance. On culture three of the seven specimens gave a growth of saprophytic acid-fast organisms which grew equally well at room temperature and failed to produce tuberculous lesions in a guinea-pig. All seven specimens on guinea-pig inoculation had failed to produce any lesions when the animal was killed seven weeks later. The fractional test meal carried out on these seven cases at the same time that the resting juice was obtained showed in two cases hyperchlorhydria, in one case hypochlorhydria, and the remaining four gave a normal result. Control investigations carried out on three patients suffering from open tuberculosis (two children and one adult) showed typical tubercle bacilli present in large or moderate numbers in the resting juice.

Conclusion

In 4.6% of resting-juice specimens examined acid-fast organisms were present. These organisms were also alcohol-fast. As pointed out by Van Diense and Hooghiemster (1938) alcohol resistance of an acid-fast organism is not sufficient to identify it conclusively as the tubercle bacillus. In this case they proved to be saprophytes, ingested very possibly with fruit and vegetables, on which they are commonly found.

It appears, from the cases investigated, that under normal conditions the chance of tubercle bacilli being found in the gastric resting juice of non-tuberculous patients is very remote.

Since the examination of gastric washings for the tubercle bacillus is a valuable diagnostic proceeding it should be noted that mere films where acid-fast bacilli are few and possibly deformed in appearance may perhaps be misleading without further investigation.

REFERENCE

Van Diense, F., and Hooghiemster, E. (1938). *C. r. Soc. Biol., Paris*, **129**, 384.

MASSIVE SURGICAL EMPHYSEMA, PNEUMOTHORAX, AND PNEUMOPERITONEUM

BY

RONALD JONES, M.D., M.R.C.P.

Honorary Physician, East Suffolk and Ipswich Hospital

Massive surgical emphysema developing suddenly during or after intubation of the tracheo-bronchial tract raises problems, including those of prevention and treatment, as shown in the cases described herewith.

Case I

A married woman aged 58 was admitted to hospital on Aug. 15, 1944, for bronchoscopy, as bronchial growth had been suspected. Premedication was by morphine 1/6 gr. and atropine 1/100 gr. General anaesthesia was induced by pentothal. The bronchoscopic examination (Aug. 18) was conducted uneventfully by Mr. K. W. Mackenzie, and no abnormality was found. A few moments after the bronchoscope had been removed the right eyelid was noted to be swollen. Very quickly this swelling spread to the face and neck. She became deeply cyanosed and respiration ceased. A needle was inserted into the anterior mediastinum above the suprasternal notch, but no air escaped. A laryngoscope was introduced into the throat, and the pharynx was found to be occluded by swollen spongy mucous membrane. The bronchoscope was then reintroduced, with difficulty. The trachea was found to be occluded by grossly swollen mucous membrane. After further manipulation the bronchoscope was introduced as far as the bifurcation of the trachea. The right main bronchus was occluded, but there was a very small passage in the much-swollen left bronchus, and oxygen was directed into it through the bronchoscope and artificial respiration started. By now she was pulseless and extremely cyanosed. At this stage the abdomen was noted to be grossly distended and tympanitic. Two needles were introduced into the flanks and air at once hissed out. Artificial respiration was continued and the pulse quickly returned, followed by spontaneous respiration and improvement of colour, the disappearance of the bronchial swelling being seen to occur during the next ten minutes. She was returned to the ward 1½ hours later, and recovered consciousness about four hours after leaving the theatre. She was given 51 g. of sulphamezathine between Aug. 19 and 25 to prevent mediastinitis. During this period the temperature remained between 97° and 100.8°. A radiograph of the chest and abdomen on Aug. 19 showed a right-sided pneumothorax and a considerable pneumoperitoneum. A further radiograph on Aug. 29 showed neither pneumothorax nor pneumoperitoneum. She was discharged on Aug. 31 symptomless, afebrile, and free of physical signs, and has remained well since.

No oxygen was administered to this patient until after the emphysema had developed, and it can only be surmised that the laryngeal, tracheal, or bronchial mucosa was damaged by the bronchoscope. It is not easy to account for the pneumoperitoneum, but the presumption is that air in the mediastinum forced its way through one or other of the weakly protected orifices in the diaphragm into the retroperitoneal space. There is no anatomical route to explain its passage from the retroperitoneal space into the peritoneal cavity. Rupture of the peritoneum by adhesions due to distension of the retroperitoneal space would be a possible explanation. The same difficulty arises in explaining the pneumothorax.