and there is usually not the high temperature or elevated blood count, unless of course there has been interference. If after considering all of these points there is still doubt between these two diagnosis a dilatation and curettage is indicated. If it is an ectopic pregnancy there may be decidual tissue but no villi.

Time does not permit us to go into the rare types of cases such as simultaneous ectopic and intrauterine pregnancy or ectopic pregnancy where there has been an attempt at abortion or the many other possibilities of ectopic pregnancy. In these cases one must be thorough and then make use of that indefinable factor called surgical judgment.

In summarizing the atypical cases one can only say that if the history and the physical findings point to ectopic pregnancy and no other diagnosis can definitely be made, a laparotomy is justified. If this rule is followed one will find the diagnosis correct in at least 75% of cases.

Treatment.—First, if the patients are bleeding, they must be adequately transfused. Secondly they must be operated on. The analysis of the deaths in Philadelphia shows that a large number of these deaths were caused either by inadequate surgery or by some added surgery such as appendectomy or myomectomy. Do adequate surgery for the condition at hand but no more.

CONCLUSIONS

A good history is still the most important item in diagnosis. Accentuated pain on moving the cervix should never be overlooked. Think of ectopic pregnancy in the child bearing age. If the patient is in shock, treat the shock and think about diagnosis and further treatment later. Surgical treatment should be adequate and limited.

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LARYNGEAL VS. GASTRIC CULTURES IN THE DETECTION OF TUBERCLE BACILLI

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SO far as we are aware, little attention has been paid in this country to the use of laryngeal swabs in the diagnosis of pulmonary tuberculosis. In 1941, Nassau described a simplified method of taking laryngeal swabs and culturing them; and in 1948, two separate reports were published by Hounslow and Usher and by Forbes *et al.*, both of these comparing the laryngeal swab with the gastric culture. These reports commented favourably on the ease of taking laryngeal swabs, and also found that they were as sensitive to culture as gastric lavages.

This present study was carried out on 100 patients in the Brandon Sanatorium, which is operated for the Department of National Health, Indian Health Services, by the Sanatorium Board of Manitoba. There are under treatment here about 240 Indians and 12 Polish veterans. At the same time, a white out-patient clinic is conducted once a week. Our series was made up of 85 Indian in-patients, varying from 1 year up to 70 years, 13 white out-patients, and 2 Polish veterans who immigrated to Canada.

Our reason for doing the series is that the simplicity of laboratory technique, the time factor, and the comfort of the patient are so very much in favour of doing laryngeal swabs that, if it could be shown that they are as sensitive to culture as a gastric lavage, it would seem reasonable to substitute them for the more unpleasant and technically more difficult procedure of gastric lavage and culture.

Our own experience has shown that all the patients preferred the laryngeal swabs. Points in favour of this procedure include the ease with which infants and children can be swabbed in cases where it has been almost impossible to pass a gastric tube. Another advantage is the fact that no set time of day in relation to meals is necessary, compared to the necessity of obtaining gastric contents before break-

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fast. For instance, no laryngeal swab in our series was taken before breakfast, but they were spread over the morning and afternoon. Out-patients especially appreciated this last feature.

As regards the time factor, owing to the ease of procedure, it is possible for one technician to take up to 12 laryngeal swabs in 20 minutes and set up the cultures in another 20 minutes, making a total of only 40 minutes; whereas 3 gastric lavages in a morning were enough for one technician to handle.

Technique.—We decided to take 3 swabs and 1 gastric lavage from each patient. The swabs were not necessarily on consecutive days, but always the 3 were obtained within 5 days. The gastric lavage was done on the day of the first swab.

Gastric wash.—The technique we use is the same as has been employed for a number of years at the Manitoba Sanatorium in Ninette, Manitoba, and is as follows:

An equal amount of 5% NaOH is mixed with the gastric contents and incubated in two sterile centrifuge tubes for 40 minutes. The first of these tubes is used for a direct examination of a smear and is treated as follows. The tube is centrifuged for 15 minutes before draining, two drops of 6% H_2SO_4 are then run down the side of the tube to neutralize the previously alkalinized sediment, and the tube is again drained and two smears are then made and stained.

The second tube, to be used for culture, is at the same time centrifuged for 15 minutes, after which the supernatant fluid is drained off and a buffer solution added. This is again centrifuged for 15 minutes and drained off, after which the sediment is planted on to culture media and incubated for eight weeks before being discarded. The buffer solution is a potassium phosphate:

KH_2PO_4 (monobasic)	1.5 gm.
NaCl	3.5 gm.
N/10 H_2SO_4	20 c.c.
Distilled H_2O	4,000 c.c.

Laryngeal swab and culture. — We made the swabs ourselves as follows: each one consists of a piece of baling wire about 11 inches long. One end is twisted to make a handle and the other end is bent to form a small hook upon which non-absorbent cotton wool is firmly wound and tied to form the swab. Non-absorbent cotton wool is essential to prevent excessive absorption of acid, and it must be very firmly secured to the wire to prevent the vocal cords from gripping and retaining the swab! About 1¼ inches from the swab end, the wire is curved to an angle of 90°. The swabs are then wrapped separately in brown paper and sterilized in a dry heat oven.

The swabs may be taken by direct vision, using a laryngeal mirror, or blindly. We used the blind method, as it is easier for laboratory technicians to learn. The patient is seated opposite the operator, who is suitably protected by a mask and a bronchoscopic glass head shield. The patient's tongue is held forward in a gauze strip by the operator's left hand. The swab, held in the right hand, is then dipped in sterile water and slipped over the back of the tongue, making sure it is behind the epiglottis, and so down into the larynx. At this point, the patient invariably coughs explosively on to the swab as it is quickly scraped over and around the cords. The swab is then withdrawn, the whole procedure having taken about 15 seconds. The violent cough produced is frequently sufficient for the epiglottis to be brought into view, and the position of the swab is thus checked.

After withdrawing the swab, the wire is straightened manually with sterile gauze and placed in a sterile tube. We use small 30 c.c. glass cylinders. This tube is plugged with sterile cotton wool until treated, which is usually within an hour.

To treat it, the cylinder is filled with 6% H_2SO_4 and allowed to stand for 10 minutes. The acid is then drained off and 1.2 c.c. of 5% NaOH is added. After 30 seconds, the tube is filled with sterile water to which a trace of methyl red has been added as an indicator. Owing to residual H_2SO_4 on the side of the tube, the reaction often remains slightly acid, so that it is necessary to add a little more of the 5% NaOH drop by drop until the solution is neutral or slightly alkaline. The swab is now left in the solution for 5 minutes and then is carefully rubbed over the culture media and incubated for eight weeks.

We used "Petragnani" media throughout and examined all tubes daily for eight weeks before discarding. In practice, a weekly examination for six weeks would suffice.

Results and Discussion

Table I.

Results of 100 Cases (1 G.C. plus 3 L.S. to each)

Positive to both G.C. and L.S.	27
Positive to L.S. only	5
Positive to G.C. only	3
Total positive to culture	35

G.C.—Gastric culture.
L.S.—Laryngeal swab.

The above table of our results shows a slight leaning in favour of laryngeal swabs, but not sufficient to be significant. Four of the above G.C. positive were positive to smear and, incidentally, positive to all three laryngeal swabs.

Table II.

Breakdown of the 32 Cases (27 + 5) Positive to L.S.

Positive to all 3 swabs	12
Positive to 2 out of 3 swabs	11
Positive to 1 out of 3 swabs	9

This table shows the necessity for taking more than one laryngeal swab from any case; a single swab being not comparable in accuracy to a gastric culture, but 2 swabs (11 + 12 = 23) or preferably 3 swabs (9 + 11 + 12 = 32) are comparable with our gastric cultures in this series (30 positives).

It is interesting to note that the average time for the gastric cultures to become positive was 21.1 days, the times varying from 13 to 34 days; and the average for the laryngeal swabs was 19.4 days, the times varying from 10 to 39 days. There was thus a slightly shorter average period of incubation for the laryngeal swabs, but not enough to be significant. In the cases of both gastric cultures and laryngeal swabs, the peak period was at three weeks.

In trying to determine the reasons for discrepancies in the two procedures, that is, the G.C. positive, L.S. negative and L.S. positive G.C. negative cases, it was found that in the 3 G.C. positive L.S. negative cases, the average culture time was 34.0 days, while in the 5 L.S. positive G.C. negative, the average time was 24 days, both of these times being appreciably higher than the average. A further point is that, of the 5 L.S. positive G.C. negative cases, 3 were positive to only one swab. These points seem to indicate that the "failures" were borderline cases, producing low concentrations of bacilli at irregular intervals.

To sum up, we took 100 consecutive routine gastric cultures and did 3 laryngeal swabs on each. Our results show that two, or preferably three of these swabs are as accurate as a single gastric lavage and culture, and it is therefore reasonable to substitute the pleasanter and easier procedure of laryngeal swab for gastric lavage.

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THE CLINICAL VALUE OF STREPTOMYCIN RESISTANCE TESTS IN TUBERCULOSIS*

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THE now widespread and practically universal exhibition of streptomycin as an adjunct in the treatment of tuberculosis has carried as its inevitable concomitant, bacteriological studies into the incidence and degree of streptomycin resistance developing in the organisms isolated during and after therapy. Reports initially stemming from these studies showed that streptomycin resistance, in incidence at least, varied largely as the duration of treatment and the size of dosage employed. Investigations have shown that prior to the onset of streptomycin treatment approximately 95% of isolated strains of tubercle bacilli are sensitive to concentrations of streptomycin of less than 5 micrograms per c.c.[1]

As these factors have tended to become stabilized, the incidence of streptomycin resistance, during and after streptomycin treatment, has emerged as a reasonably constant phenomenon; the remaining variables being the technical methods employed by various workers in this field and the individual and arbitrary definition of resistance.

At the Toronto Hospital for Tuberculosis investigations demonstrated the development of resistance in approximately 60 to 70% of cases

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