may be worth stressing is that in our cases the leucocyte gel layer lying between the red cells and the plasma was not removed during preparation of the suspension. Leaving this gel did not seem to play any part in the incidence of reactions. This contrasts with the impression of McQuaide and Mollison, who thought it possible that the leucocyte gel might have been at least partly responsible for the rather high reaction rate found in their series of transfusions with stored whole blood.

It is generally agreed that some of the aetiological factors responsible for the allergic reactions following blood transfusions are most common in individuals with a past history of allergic disease. Of the patients treated in our present series only two gave such a history. Case 16 had hay-fever and asthma for some years, and actually had a number of severe attacks over the period during which he was being transfused. However, there were no reactions in connexion with the transfusions with cell suspension. Case 10, who produced a marked generalized urticaria after 1 pint of whole blood, and in whom no reaction was induced by cells in saline, never had any allergic phenomena himself, but his child suffered from severe hay-fever. Skin tests for sensitivity to plasma, however, were not carried out in any of these patients.

The other important problem, apart from the question of reactions, is whether or not the cell-suspension transfusion is as effective in counteracting malnutrition and septic conditions and improving haematopoiesis and the general condition of the paraplegic patient as the whole-blood transfusion. Judging from the haemoglobin and red-blood-cell estimations (Table II), and the clinical condition of our patients before and after transfusion, it can be concluded that the cell-suspension transfusions were found to be at least as beneficial as the whole blood.

Summary

The immense value of repeated blood transfusions—the most effective method in the treatment of spinal paraplegics suffering from malnutrition and septic conditions due to infection of pressure sores and the urinary tract—is stressed.

In a series of 22 patients the occurrence of undesirable reactions following blood transfusions is discussed.

Transfusions with cell suspensions in saline were found to be more effective in decreasing the incidence of undesirable reactions than whole-blood transfusions.

Certain factors responsible for allergic reactions following blood transfusions are discussed.

My thanks are due to Dr. L. Guttman for his encouragement and help in writing this paper.

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According to Dr. Niels Sjørlev, medical director of the Fight Against Tuberculosis in Denmark, his country's tuberculosis sanatoria cannot be kept full. There are not enough cases in Denmark requiring sanatorium treatment. Dr. Sjørlev was speaking in London before a joint meeting of the Anglo-Danish Society and the National Association for the Prevention of Tuberculosis called to hear about a scheme for sending British children with tuberculosis to the Vordingborg Sanatorium in Denmark.

USE OF A FUCHSONIUM COMPOUND FOR NON-SPECIFIC CERVICITIS AND VAGINAL THRUSH

BY

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The treatment of vaginal discharge has always been a troublesome problem. This is obvious from a scrutiny of the literature, in which a multitude of remedies are recommended with varying claims of success. In those cases in which the discharge is related to an organic lesion or to a specific infection the question resolves itself into the relatively simple one of treating the cause. There remain, however, a very large number of patients in whom no gross organic lesion is present and from whom no definite pathogen can be isolated. It is these patients who prove most difficult to treat, especially as the remedies must of necessity be largely empirical. In current medical literature the condition has been referred to loosely as "non-specific cervicitis."

Various treatments for this condition have been tried and recommended. For some time it was thought that the reaction of the vaginal fluid was most important, and local treatment with lactic acid in some form was very popular. Occasionally other acids were employed; for instance, acetic acid as a vinegar douche. In more recent times claims have been made on behalf of sulphonamides and antibiotics, but it is remarkable that gentian violet still finds a place in the treatment of this condition, and it is the only remedy which seems to have maintained its place as a vaginal therapeutic agent over a long period. We have made use of these various remedies, and have found gentian violet the most effective. It has, however, certain disadvantages. It stains hands, clothing, and bed-linen, and sometimes causes severe irritation and even "burning" of the tissues. With this in mind we have been searching for a substance similar to gentian violet but without its disadvantages. Recently we have made a clinical trial of a new preparation containing a sulphonated derivative of fuchsonium and sodium baborate. Altogether we have treated 80 cases of "non-specific cervicitis" and 60 cases of vaginal thrush.

It is convenient to consider the cases in two groups, Group I being the 80 cases of "non-specific cervicitis" and Group II the 60 cases of thrush.

Group I

The patients in this series were drawn from the gynaecological clinics of two hospitals in the City of Glasgow, and were under the personal care of either D. M. H. or C. H. B. Most of them were in the child-bearing age group, the average age being 32.3 years, with extremes of 19 and 66 years. Seventy-one were parous, the average parity being 2.1. The main complaint was of vaginal discharge accompanied by a varying degree of vulvar and vaginal irritation and discomfort. The average duration of these symptoms was 2.3 years, with extremes of 6 weeks and 11 years.

The discharges varied very much in character, but could be divided roughly into three types according to the colour—

TABLE I

Type of Discharge	Frequency	Average Age	Average Parity	Average Duration
White	42%	30.7 years	1.9	2.4 years
Yellow	46%	31.8 "	2.6	1.4 "
Brown	12%	31.3 "	2.0	2.0 "

white, yellow, and brownish. An attempt was made to relate the type of discharge to the age, parity, and duration of the complaint. The figures are shown in Table I. It will be seen that there is little variation between the groups. Subjective symptoms such as pruritus and vaginal irritation were more severe in those patients with a yellow or brownish discharge.

Bacteriology.—At each visit a fresh swab of the discharge was obtained and the vaginal flora was graded according to the classification of Cruickshank and Baird (1930) and in relation to the colour of the discharge. The results are shown in Table II. As would be expected, almost all the

TABLE II

Grade	Discharge		
	White	Yellow	Brown
A	6%		
B	22%	20%	33.4%
C	72%	80%	66.6%

cases fell within grades B and C. A few cases with grade A flora were found in the group with a white discharge. Fresh smears showed a mixed flora in grade B and C, including staphylococci, streptococci, coliform organisms, and diphtheroids. Culture by ordinary methods yielded a similar mixture of bacteria with no constant relationship between the type of organism and the symptoms of the patient. With treatment the flora changed, but again it was impossible to relate the change in any one organism to the response of the patient. The most significant feature was the return of Döderlein's bacillus in cases in which it had previously been absent. Attempts were made to culture bacteria from the discharges on specially enriched media, and it was noted that in 65% of cases a small diphtheroid organism could be isolated. This organism appeared to be related in some way to the patient's condition. It was abundant initially, gradually diminished as the discharge cleared, but persisted when the discharge did not respond to treatment. Further observation will be required, however, before any definite opinion of its nature and significance can be given.

Mode of Treatment.—Originally the preparation was applied by the clinician twice weekly in the form of a white cream to the cervix and vault of the vagina. This mode of application presented a little difficulty, and at a later date the cream was obtained in tubes with a patent plastic applicator. After careful instruction in their use by the clinician these tubes and applicators were supplied to the patients, who applied the cream each night on retiring. About a quarter of the contents of the tube was used at each insertion, but ultimately pessaries were obtained which could be inserted by the patient before going to bed.

Results.—Of the 80 cases treated, 70 had rapid relief of subjective symptoms, the pruritus and irritation disappearing after two applications. The discharge persisted, however, for longer, but subsequently 61 cases were completely cured, the discharge and all associated symptoms disappearing. In the remaining nine patients who showed initial improvement the discharge was greatly reduced and became white and odourless. Ten cases responded unsatisfactorily to treatment. There was slight relief from subjective symptoms, but the discharge was as profuse as before. No difference could be found between the discharge in these patients and in those who responded to treatment except in one case in which *Trichomonas vaginalis* was present. All of these failures occurred in the earlier part of the series, when treatment was applied only twice weekly. Subsequently seven

of these patients returned and were given daily treatment. All of them responded satisfactorily, with the exception of the case showing trichomonads in the discharge. The average number of applications required in those patients who responded initially was 4.5, with extremes of 2 and 9. In those cases in which the response was satisfactory after more vigorous treatment nine applications were required on an average. In this series, then, 83.7% of the patients were "cured," and another 11% were much improved.

Group II

This series of 60 cases of vaginal thrush occurred in pregnant patients. All presented the typical signs and symptoms—a marked irritation associated with white spots on an inflamed vaginal mucosa and a yellow cheesy discharge. In all cases the disease was related to pregnancy and there was no history of any symptoms before conception. There was no apparent relationship between the incidence of infection and the age of the patient, but multiparous patients were most often affected, the average parity in this series being three.

Bacteriology.—Microscopical examination of fresh smears showed that the vaginal flora in almost all cases fell into grade B, and the main feature was the presence of the yeast *Candida albicans*.

Treatment and Results.—Treatment was carried out in the same manner as in Group I. The result was quite striking. Relief was almost immediate. All signs and symptoms disappeared within 7 to 10 days. It was remarkable that, although the symptoms were relieved, the Gram-positive yeast buds could still be demonstrated in vaginal smears for several days after all discharge had ceased. Eventually, however, they disappeared. All cases responded. As in the previous series, irritation was relieved after one or two applications of the cream. The discharge ceased and all signs of inflammation disappeared after four or five treatments.

Discussion

In Group I 83.7% of cases were "cured" and a further 11% improved. The remaining 5% could be regarded as failures, although these included one case of trichomonad infestation and three patients who could not be traced in a subsequent follow-up. It is interesting to note that 18 cases of this group had previously been treated by us, using vinegar douches, "dettol," various antibiotic substances, and arsenical preparations without success. Subsequent treatment with the present preparation proved satisfactory.

Siegler (1946) reports the results of treatment of 230 cases of vaginitis with sulphathiazole jelly. Of these cases, 83% were regarded as cured, 10% were improved, and 8% were unsatisfactory. It is important, however, to note that this group included cases of trichomonad infestation, moniliasis, and gonorrhoea as well as non-specific infections.

Rakoff (1945) recommends acid douches and acid jellies for non-specific vaginal discharge, but in our hands these have not proved very satisfactory. In our experience gentian violet has hitherto been the most effective agent, and a similar opinion is held with regard to the treatment of moniliasis (Rakoff, 1945; Kuder, 1946; McIlrath, 1946). It has the disadvantage, however, of staining everything with which it comes in contact, and where there is excoriation it sometimes proves irritating. The preparation we used, which is chemically akin to gentian violet, has none of these disadvantages, being non-staining and non-irritating.

Summary

Eighty cases of vaginal discharge were treated with a fuchsonium compound. All but one were of non-specific type.

Of these cases 83.7% were considered to be cured, 11% were greatly improved, and 5% were unsatisfactory. Of the latter, one was a case of trichomonad infestation.

The average number of treatments required in the satisfactory cases was 4.5.

Forty cases of monilial infection in pregnancy treated with the same preparation were all regarded as cured.

We thank Messrs. Camden Chemical Co. for liberal supplies of this compound, which is marketed under the name of "pruvagol."

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RADICAL DUODENOPANCREATECTOMY FOR PAPILLOMA OF THE PANCREATIC DUCT

BY

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The case described below is presented as a pathological rarity. F. M. Owens, in 1948, mentioned a similar case, details of which are appended below, but no other case can be traced in the literature. Willis (1948) makes no mention of the condition, nor does Brunschwig (1942) or Boyd (1947). The recent literature on the operative removal of the pancreas confines itself to (1) tumours of the ampullary region; (2) tumours of the pancreas itself, usually designated as adenocarcinoma; (3) tumours or enlargements of islet tissue; and (4) chronic pancreatitis.

Case History

A storekeeper aged 50 first came under observation in October, 1950, when he had already had pain in the right upper abdomen for one year. It occasionally radiated to the back and then was referred to an area over the angles of the left tenth, eleventh, and twelfth ribs. The pain was occasionally severe, but usually simply a dull ache. It seemingly had no relation to food, nor had it impaired his appetite or digestion. The bowel action remained regular, and there were no symptoms referable to any other system. His general health was good, and at no time had he been jaundiced. He had had diphtheria 40 years previously and haemorrhoidectomy 11 years ago.

A complete general examination revealed no abnormality, and the only positive abdominal sign was slight tenderness over the fundus of the gall-bladder on deep inspiration. A cholecystogram showed a gall-bladder functioning well and no radiological evidence of gallstones. A clinical diagnosis of probable cholecystitis was made and a fat-poor diet, with the addition of cholagogues, was prescribed for a trial period. I saw him again in February, 1951, but there was no change in the syndrome of fairly constant pain of the same distribution, with momentarily severe attacks. There was still no upset in digestion, no jaundice, or any deterioration in general health. Examination again revealed nothing wrong except a tender gall-bladder on deep inspiration. Laparotomy was now advised and accepted.

Operation.—On March 2, under general anaesthesia (thiopentone, gas and oxygen, and intermittent intravenous curare), a right upper paramedian incision was made. The gall-bladder was not distended, but was slightly thickened and opaque. The whole pancreas, including the uncinate process, was thickened and nodular, but no definite separate tumour could be felt in the head. The gland was thought to be the site of an obstructive lesion in its main duct

system, most probably a carcinoma. On this account it was decided that an attempt at radical cure should be undertaken; but, whatever the nature of the lesion, it was obvious that pancreatectomy alone would abolish the severe continual pain.

Technique.—Radical duodenopancreatectomy was performed, closing the fourth part of the duodenum and dividing the pancreas so as to leave only a small piece of the body and the tail. The following reconstruction was undertaken: The first loop of the jejunum was drawn up in front of the transverse colon and into its apex was implanted the common bile duct, with the help of a small rubber tube. The stomach was implanted end to side into the efferent limb. The raw pancreatic area was oversewn with interrupted sutures of catgut and linen thread, after ligation of the pancreatic duct. Drainage was provided for the biliary anastomosis and the pancreatic stump. The whole procedure took four and three-quarter hours, and during it the patient was transfused with 4 pints (2.2 litres) of blood to replace blood lost from a damaged portal vein behind the pancreatic neck. This was finally dealt with by lateral suture.

Post-operative Progress

The patient's condition was remarkably good on return to the ward, and he had a systolic blood pressure of 110. Bed-blocking by the foot and an oxygen tent prevented any post-operative shock in the first 24 hours. He began taking nourishing fluids on the third day and thereafter a light diet, progressing to a fuller diet poor in fats. There was no drainage from either of the drainage-tubes, and these were removed on the fifth day. He got up for a short time on the second post-operative day, and thereafter for increasing periods until the eleventh day, when he developed a left pleural rub associated with a thrombosis in the left calf. This cleared satisfactorily with rest in bed and a few days' heparin therapy. By this time the patient was having three to four loose stools a day, but had no other complaint. Traces of reducing substance were occasionally noted in the urine.

Post-operative Investigations.—Faecal analyses (see Table I); sugar-tolerance tests (see Table II); serum amylase, 3 units; urinary diastase, 7 units.

TABLE I.—Faecal Examination

Date	Undigested Meat Fibres	Total Fat	Neutral Fat	Free Fatty Acids	Soaps
19/4/51	Present	44%	12%	21%	11%
22/10/51	"	28%	1.8%	10.6%	15.6%

TABLE II.—Sugar-tolerance Tests

	Fasting	½ hr.	1 hr.	1½ hr.	2 hr.
19/4/51 mg./100 ml.	102	108	152	184	152
2/10/51 mg./100 ml.	90	140	162	106	82

Altered Physiology.—First of all there was a not unexpected trypsin deficiency, as evidenced by undigested meat fibres in both faecal analyses. On the other hand, there seemed to be enough lipase left to split fat adequately, but there was a pronounced deficiency in the absorption of fatty acids. I can only suggest that the intestinal lipase was not sufficient to split the fat before it had left the absorptive area of the gut, but was sufficient to split the fat before final excretion per rectum. The sugar-tolerance test on May 19 showed a mild diminution in tolerance with a high blood sugar at the end of two hours. This suggests that there had been left just enough islet tissue to deal with the insulin needs of the body. It seems likely that work hypertrophy of islets had taken place, as the sugar-tolerance test on October 22 showed a normal series of figures.

Pathology.—The main pancreatic duct widened into a considerable dilatation some 1 in. (2.5 cm.) from the duodenal