

contained tubercle bacilli. The abdomen was closed as excision would have been unwise. A lymphatic gland was removed and bacteriological examination revealed one tubercle bacillus but this was not confirmed by pathological examination.

This patient is having a full course of anti-tuberculous therapy but in my view falls very well into the group so ably described by Brooke and his associates. Until we find the cause of this type of infection it is unlikely that surgery will have much to offer.

#### CONCLUSIONS

I have set out briefly the varieties of idiopathic infections which may affect the right colon. Such conditions as actinomycosis, tuberculosis, and diverticulitis have been omitted since their ætiology is known and their treatment well established.

It is now possible with careful radiological and sigmoidoscopic examination to differentiate the group I have described from true ulcerative colitis; I hope that the importance of accurate diagnosis has been sufficiently stressed since on that alone hangs the only hope of successful treatment.

#### REFERENCES

- BROOKE, B. (1954) *Ulcerative Colitis and its Treatment*. London.  
 BUTLER, E. C. B. (1950) *Proc. R. Soc. Med.*, **43**, 266.  
 — (1953) *Proc. R. Soc. Med.*, **46**, 69.  
 CROHN, B. B., GARLOCK, J. H., and YARNIS, H. (1947) *J. Amer. med. Ass.*, **134**, 334.

## Pruritus Ani

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SEVENTY-FOUR patients with this common and disabling symptom were studied over a period of about fifteen months at Hammersmith and St. Mark's Hospitals.

A pro-forma was used to record a detailed history; and a description of the local lesion included rectal and sigmoidoscopic examinations. The patients were followed up at regular intervals. In 54 cases a bacteriological investigation was carried out.

Progress was recorded as (1) cured, (2) improved, or (3) no change or worse. Cure implied cessation of symptoms and *complete* regression of skin changes, with a minimum follow-up of two months. I believe that the risk of relapse following a cure based on such strict criteria is remote.

*General features.*—These are shown in Table I. Although half the patients took aperients

TABLE I.—GENERAL FEATURES 74 CASES

Sex .. .. .	.. .. . 67% male	Mucus leak .. .. .	.. .. . 15 cases
Average age .. .. .	.. .. . 30-50 years	Very hairy .. .. .	.. .. . 16 cases
Length of history .. .. .	.. .. . 2 weeks-20 years	Diarrhoea .. .. .	.. .. . 7 cases
Other dermatitis .. .. .	.. .. . 8 cases	Constipation .. .. .	.. .. . 6 cases
Excessive sweating .. .. .	.. .. . 10 cases	Day/night ratio .. .. .	.. .. . 1/3 (periodicity)

regularly, only 6 suffered severe constipation requiring large doses. The discomfort due to a loaded bowel, mainly internal but sometimes accompanied by mild itch, must be distinguished from the quite different peri-anal irritation of pruritus. Diarrhoea and mucus anal leak would seem to have a closer bearing on the ætiology.

*Clinical examination.*—In most male cases there was a prominent mid-line raphe passing forward to the scrotum. In the female a similar fainter line was often present. This was frequently the site of most intense irritation.

Only 2 out of the 23 women had pruritus vulvæ as well.

An interesting observation was that most of the patients with "idiopathic" pruritus had a hypotonic anal sphincter: this contrasted markedly with the normal or increased tone associated with the presence of organic disease.

On the basis of their physical appearance, the lesions were grouped into five fairly distinct patterns, although a certain amount of overlap did occur (Table II):

TABLE II.—CLINICAL CLASSIFICATION

Cases	Classification	History (average)	Severity (average)
I. 4	No change	—	+ to ++
II. 28	Mild inflammatory pink damp skin	4-5 years	+
III. 17	Severe inflammatory red-purple, thick oedematous weeping skin	8 months	++ to ++++
IV. 16	Severe inflammatory type with simple lichen change	2 years plus	+ to ++
V. 9	Dry desquamating type	—	+ to ++

- (1) A small number in whom no skin changes were discernible (4 cases).
- (2) A large group in whom a faint or moderate pink discoloration was seen over an area 4-6 cm. diameter round the anus; this was frequently surrounded by a zone of brownish pigmentation (a common finding in all groups). The lesion was not dry, nor frankly moist; the general impression was of a damp mild inflammation. The intensity of symptoms was mild and the history averaged four to five years.
- (3) A smaller group (17 cases) with a widespread, weeping red-purple lesion. Symptoms were severe and history short (in only one case exceeding a year). Excoriations due to scratching were evident.
- (4) Another 16 cases showed lichenification of the skin on a red œdematous background; this seems to be a more chronic stage of Group III. The intensity of symptoms was less, and the history longer (average two years).
- (5) 9 cases had a dry, desquamating lesion, usually with pink skin (though occasionally this was a more vivid red).

Though the macroscopic picture did not help in assessing the cause, it was of value in determining prognosis (Table III). The more marked the organic skin changes, the more difficult was it to achieve a cure.

TABLE III.—CLINICAL GROUPING AND RESPONSE TO TREATMENT  
ON 58 CASES FOLLOWED UP

Group	I	II	III	IV	V
Cured ..	1	9	5	3	4
Improved ..	3	8	7	10	2
No change..	—	3	2	—	1

*Local lesions.*—*Skin tags* were seen in several patients, and it seemed logical to blame these for some degree of irritation.

*Fissure-in-ano:* only a few of these patients complain of itch (though many are sensitive to anæsthetic ointments used in their treatment).

*Hæmorrhoids* were present to some degree in over half the cases: although the majority of these were very minor and no symptoms directly attributable to them, any deviation from normal was recorded.

*Histology.*—A photomicrograph of normal anal skin (Fig. 1) is reproduced for comparison

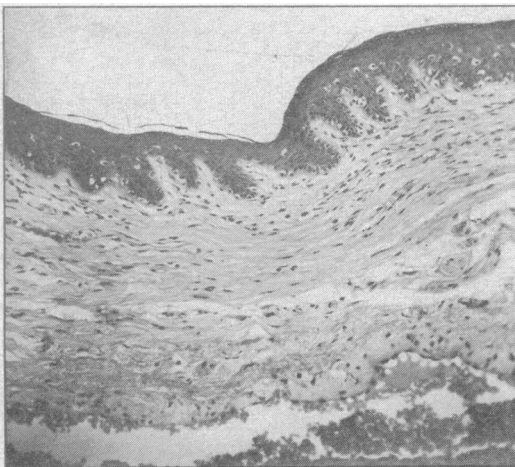


FIG. 1.—Normal anal skin. × 145.

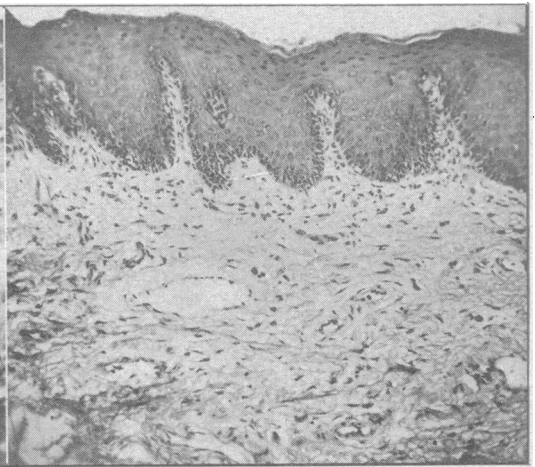


FIG. 2.—Histology in severe pruritus ani. × 145.

with a biopsy from a patient with severe pruritus (Fig. 2). Buie (1931) and later Riddoch (1937) have suggested that the initial change is an œdema of the dermis with lymphatic and capillary dilatation; there follows proliferation of the prickle cells with elongation of the rete pegs and, finally, hyperkeratosis with patchy parakeratosis. A generalized but mild infiltrate of inflammatory cells is also seen.

This is what the skin histo-pathologist calls lichen simplex, and is not dissimilar to the microscopical features of lichen planus, psoriasis and leukoplakia—in fact, a non-specific inflammatory skin reaction to any form of injury.

**Bacteriology** (Table IV).—A careful technique for taking and culturing the swabs was designed to demonstrate all bacteria, yeasts and fungi.

TABLE IV.—BACTERIOLOGY OF 54 CASES

Organism	No. of times cultured	Profuse growth in
<i>Strep. hæm.</i> ..	22	14
<i>Strep. fæcal.</i> ..	23	15
<i>Staph. pyog.</i> ..	12	10
<i>B. coli.</i> ..	28	18
<i>C. albicans</i> ..	2	—

*B. coli* normally grows in profusion and is usually the predominant organism in such cultures. In this series, however, it was isolated in only 50% of cases, one-third of these showing only moderate or scanty growth. *Str. hæmolyticus* was cultured in 40% of cases, the commonest Lancefield groups being B, C, and G. *Strep. fæcalis* grew in a similar number of cases. *Staph. pyogenes* was seen less often, but nearly always in profuse growth.

*Candida albicans* was cultured in 2 cases, and “non-pathogenic” yeasts in 3. Ano-vulval epidermophytosis is rare, and was not encountered. The accepted criteria of fungal infection—desquamation or vesiculation and a well-defined border—were never seen.

There was no relation between the type of organism cultured and the appearance of the peri-anal skin; I think the preponderance of Gram-positive cocci should be regarded as a manifestation of secondary infection.

**Treatment.**—Those patients with *organic disease* were treated on the usual lines applicable. In this study I labelled as first degree piles any significantly enlarged veins, and injected them, with conspicuous success. Three-quarters of these patients (17 out of 23) were improved, nearly half of these with complete remission. The mode of action is presumably obliteration of the dilated capillaries and lymphatics described by Buie and Riddoch.

All 4 of the patients who had skin tags excised returned with recurrence of symptoms within six months—and one within a fortnight!

A few notes will be made about the local remedies most commonly used in patients with *no organic disease*:

*Local hygiene* instructions usually improved comfort considerably.

*Lotio mag. carbol.* (“St. Mark’s lotion”) was always a good stand-by to relieve symptoms, but seldom did more.

*Antihistaminics* (Anthisan local and oral) were used when other sensitivity phenomena (e.g. asthma, urticaria) existed, in 6 cases. Little response was obtained.

*Fungicides*, used in 5 cases, were generally efficacious in eradicating yeasts (as shown by serial cultures). Only 2 of these, however, reported definite clinical improvement. It must be remembered that *Candida albicans* may be isolated in up to 15% of fæcal cultures in normal persons.

Two proprietary preparations were tried:

(1) *Hydrolamins*, an ointment containing amino acids which it is alleged may neutralize abnormal irritant protein breakdown products excreted.

(2) *Covicone*, a barrier cream which it was hoped might protect the skin from irritant factors present in the fæcal stream. Neither of these had any effect on the 10 patients who used them.

*Antibiotic therapy* (chloramphenicol, local and oral) was given to 12 cases from whom a profusion of pathogenic cocci was cultured. A fair measure of success was obtained, 3 patients being cured, and 5 relieved.

*Hydrocortisone* (acetate, 1% ointment) has been given recently to 6 patients, with startling initial success. Immediate remission of symptoms occurred in all 6, but 3 relapsed as soon as the treatment was discontinued. Other authors have had similar experiences (Robinson, 1953; Sidi, 1953). There seems to be no objection, however, to continuing treatment indefinitely, for the amount of systemic absorption is negligible.

*Alcohol injection* and *X-ray therapy* were in this study kept as a last resort; but in 4 of the former and 2 of the latter cure has been complete and, so far, permanent.

#### COMMENT

(1) As this investigation was conducted on an organic basis, psychological factors, though noted, were ignored in the first instance. They are nevertheless important, and must be borne in mind (Macalpine, 1953).

(2) The patient must be subjected to a detailed questionnaire and complete examination. A sigmoid cancer was diagnosed in one man.

- (3) Any local lesion is treated, and even the most insignificant hæmorrhoids are injected.
- (4) Hygiene instructions are given, and the use of aperients reviewed.
- (5) If the irritation is severe, hydrocortisone ointment can be relied upon to produce immediate relief.
- (6) A course of antibiotic therapy is justifiable, but other local applications, unless specifically indicated, are unlikely to benefit the patient.
- (7) Although my experience with alcohol and X-rays is limited, I would like to suggest early recourse to these measures if conservative treatment does not produce a rapid response. It seems that the dangers of slough and necrosis have been exaggerated, provided due care is taken.
- (8) From the clinical aspect, not much help can be expected from anal culture, which should be reserved for difficult cases.

I would like to acknowledge my indebtedness to Dr. A. C. Dutton of the Department of Bacteriology, Hammersmith Hospital, for all of the bacteriological work; also to Professor J. C. Goligher, who allowed me to study his cases when he was at St. Mark's Hospital and to Mr. Maurice Ewing for the cases seen at Hammersmith.

#### REFERENCES

- BUIE, L. A. (1931) Proctoscopic Examination and the Treatment of Hæmorrhoids and Anal Pruritus. Philadelphia and London.  
 MACALPINE, I. (1953) *Psychosom. Med.*, **15**, 499.  
 RIDDICH, J. W. (1937) *Lancet*, **i**, 919.  
 ROBINSON, R. C. (1953) *Bull. Johns Hopk. Hosp.*, **93**, 147.  
 SIDI, E. (1953) *Pr. méd.*, **61**, 1760.

[March 16, 1955]

## Explosive Risks in Large Bowel Surgery

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THREE factors are necessary in order to produce an explosion: the presence of a combustible gas; the presence of oxygen to support combustion; and the introduction of a flame or spark to ignite the mixture.

Explosive risks associated with surgery can be divided into four groups: the presence of inflammable anæsthetic gases or vapours; eructation by patients suffering from pyloric stenosis; collections of gas in the lower bowel; and the generation of inflammable gases during electro-coagulation or diathermy of the body tissues.

Taking this last risk first, it has been proved that the gases given off when high-frequency currents are applied through a fine electrode to body tissues contain acetylene, ethylene, carbon monoxide, and hydrogen in varying quantities (Hambleton *et al.*, 1935). Fortunately these are usually ignited as they are formed and their combustion contributes largely towards the spluttering associated with diathermy. If, however, they collect in a confined space such as the mouth, rectum or bladder, they may accumulate sufficiently to form an explosive mixture. This undoubtedly is the cause of those occasional pops heard during fulguration of bladder growths, for the gases cannot escape and rise to mix with the air bubble and, upon occasion, the electrode may set up a spark near them and cause a mild and muffled explosion. Similar types of explosions have occurred in the mouth while using diathermy upon the tongue in cases where no inflammable anæsthetic was in use.

It is not beyond the realms of possibility therefore that diathermy gases could accumulate within the lumen of a sigmoidoscope and, mixing with the air within that instrument, be ignited by a spark caused when next the diathermy was used.

It is now well established that explosive eructations have taken place with patients suffering from pyloric stenosis (Beatson, 1886; McNaught, 1890; Martin, 1902; East, 1934; Galley, 1954). In 1929 while a casualty dresser at King's College Hospital I saw one such case (East, 1934; Galley, 1954). The patient complained that an explosion had occurred while he was eructating during the lighting of a cigarette in the front row of a cinema gallery—the cigarette being propelled by the explosion into the pit below. This man had blisters inside the lips, singeing of the moustache, blisters on his fingers, and singeing of the eyebrows. He was admitted under Dr. Terence East, the Medical Clerk being Dr. A. M. Rackow, now radiologist at King's College Hospital. He was later successfully operated upon for pyloric stenosis—a gastroenterostomy being performed. A second example was that of a young