I saw her was sugar-free; nor, though I encouraged her for other reasons, as she was miserably thin, to take large quantities of starches and sugar, did she ever show sugar in the urine, while her blood sugar curve was perfectly normal. Another recent case was that of a man who at intervals of a few months passed large quantities of sugar for a few days at a time without making any change in his habits, and with no discomfort except the polyuria.

I might multiply these out-of-the-way cases indefinitely from my experience and probably from yours. Many of them occurred before blood sugar curves were dreamt of. They are of little general interest, but they serve to prove that we do not yet know all there is to be known about the production of glycosuria, and that until we do know a good deal more it behoves us to be cautious, especially in insurance work.

A Lecture

ON

MULE-SPINNERS' CANCER:

CLINICAL FEATURES AND TREATMENT.*

BY

A. H. SOUTHAM, M.A., M.D., M.Ch.Oxon.,
F.R.C.S.Eng.,

HONORARY ASSISTANT SURGEON, SALFORD ROYAL HOSPITAL; ASSISTANT
SURGICAL OFFICER, MANCHESTER ROYAL INFIRMARY; ASSISTANT
SURGEON, ROYAL MANCHESTER CHILDREN'S HOSPITAL.

It is only within a very recent period that cancer of the scrotum and skin has come to be recognized as being associated with the occupation of mule-spinning in cotton mills. The subject was brought into prominence by an article on cancer of the scrotum published in the *BRITISH MEDICAL JOURNAL* in 1922.¹ Since that date numerous cases have been reported to the Factory Department, and through these notifications, through the mortality records of the Registrar-General, and from other sources the department has been able up to the present to trace 667 cases—570 in spinners and 97 in ex-spinners who passed into other employment.

Following the publication of the above-mentioned paper the Federation of Master Cotton Spinners and the Association of Operative Cotton Spinners and Twiners, with the co-operation of the Factory Department, drew up a warning leaflet in 1923. This was distributed among the workers to direct the attention of the industry to the prevalence of the disease. The importance of cleanliness was urged, and the danger of delay in securing early medical treatment, as soon as symptoms show themselves, was emphasized.

On March 27th, 1925, the Home Secretary appointed a Departmental Committee to inquire into the question; its report was published in February, 1926. In the opinion of the committee the evidence was strongly in favour of the view that this form of cancer was due to the prolonged action of mineral oils.

As the occurrence of the disease has only been recognized for a few years the premonitory signs and clinical course of the condition have not yet been fully studied. It is proposed to describe shortly the clinical features of this form of cancer as it occurs amongst mule-spinners, and to show how the disease can be diagnosed at an early stage after its commencement. At the onset it is a relatively benign type of malignant growth, and early operation for its removal offers a good chance of cure.

The lesion on the scrotum is a cutaneous epithelioma similar to that arising elsewhere. It is commonly seen in men between 40 and 60 years of age, though it may occur earlier, or at an age considerably older. The first manifestation is a wart-like excrescence or a flat plaque due to local hyperplasia of the epithelium. This wart or papule is usually single and about the size of a pea; it is raised above the surface and may be covered with scales, which the man removes by scratching, leaving a small bleeding surface over which the scales soon re-form. The only symptom which troubles the patient at this stage may be itching about the growth. In other cases there may have

been several small papillomata present on the scrotum, and one of these takes on the above characteristics whilst the others remain benign. Later the growth sloughs and definite ulceration follows in six to twelve months, when the patient seeks medical advice on account of the irritation and discharge.

Until quite recently it was uncommon to see cases in the early stages, for three reasons. First, for reasons of modesty, owing to the position of the growth; secondly, because the men did not pay any attention to these slight symptoms; and thirdly, because both the spinners and their doctors failed to recognize their significance and to realize the importance of early treatment. Owing to the wide publicity given to the disease in the last four years the men themselves are now beginning to understand the meaning of the initial signs and to seek medical advice if symptoms appear.

When fully developed the tumour is proliferative, of the cauliflower type, with a raised everted and indurated edge surrounding an ulcer. The ulcer is often the size of a shilling; it is of relatively slow growth and rarely involves the deeper structures. This is due to the fact that the lymphatics of the scrotum and testis are quite separate and there is no anastomosis between the superficial and deep systems.

It may sometimes be difficult to determine when the lesion has become malignant, but from the very first it should always be regarded with grave suspicion. The disease is usually seen on the scrotum and on the left side; in approximately 25 per cent. of cases the growth may be found on other sites, chiefly the head, neck, and forearm.

The tendency for this type of cancer to form metastases is at first slow and its malignancy is not great. In the initial stages the enlarged inguinal glands do not necessarily contain carcinomatous deposits; the enlargement may be purely inflammatory, due to the infective processes taking place on the surface of the ulcer. Sooner or later, however, malignant invasion of the glands is bound to occur, and with the progress of the disease the most conspicuous feature is the breaking down of the glands in the groin. Finally death follows from exhaustion due to septic absorption or haemorrhage from the femoral vessels, whilst occasionally internal metastases in the abdominal glands, liver, or peritoneum give rise to abdominal symptoms or pain from pressure on nerves.

It is important to remember that the disease at first and for a considerable time is purely local, and there is ample time both for diagnosis and treatment before it has spread to other parts.

TREATMENT.

Cancer of the scrotum should be one of the most favourable types of malignant disease for surgical treatment, as it can be discovered at a very early stage. The cure of the disease depends on its early diagnosis and radical removal.

In considering treatment, it is essential to have a clear understanding of the lymphatic vessels of the scrotum and the glandular areas into which they drain.² The superficial lymphatic system consists of a fine network of lymph capillaries covering the whole scrotum, lying beneath the skin and external to the dartos muscle. There is a free anastomosis of this network across the two sides of the scrotum. The collecting channels from this run above and below Poupart's ligament to reach the superficial inguinal glands. The trunks coming from the anterior surface of the scrotum may pass direct to a gland which lies just internal to the anterior superior spine of the ilium, and is the most external gland of the horizontal set. This point is of considerable importance, since mule-spinners' cancer is commonly found on the anterior aspect of the scrotum. The lymph channels run both superficial and deep to the saphenous vein. No channels appear to pass the inguinal glands to reach the iliac glands direct, and primary lymphatic infection is therefore only found in the inguinal glands.

The treatment of this disease is essentially surgical. Any other form of treatment can be merely palliative. All forms of radiotherapy have proved disappointing and appear to be of doubtful value. We know of no case improved after x-ray treatment, in spite of the fact that

* Delivered in the Post-Graduate Course of the Manchester Committee on Cancer.

these tumours are so superficial and easily reached. In the early stages all scrotal warts and papillomata seen in mule-spinners should be removed, and local excision should be followed by microscopical examination.

When a definite ulcer is present a wide operation, consisting of removal of the growth with a healthy margin of skin and excision of the lymph-bearing areas in both groins, should be carried out. In the past many cases were treated by simple removal of the scrotal growth without excising the glands. Metastasis in the groin occurred later on in the majority of these cases and further operation was then often impossible.

It is important to treat this disease radically at the onset by removing both growth and glands at once. Our knowledge of the lymphatic system shows that it is only necessary to remove the scrotal ulcer and skin around it; deeper dissection is not required if the whole thickness of skin and dartos be excised. The glandular areas require more extensive dissection, and owing to the free anastomosis between the superficial lymphatics of both sides of the scrotum, bilateral infection of the glands is not uncommon. This is particularly likely to occur when the growth is situated on the anterior aspect of the scrotum.

The incision for the glands should extend from the spine of the pubes right out to the anterior superior spine of the ilium with a convexity downwards. The whole mass, consisting of fat, glands, and lymphatic vessels, is dissected out from above downwards in one piece, the dissection extending above Poupart's ligament. The upper three or four inches of the saphenous vein are removed also. All the glands and fatty tissue in Scarpa's triangle are thus excised and the femoral vessels stripped clean. These wounds are closed without drainage, and if the glands have not broken down should heal without any difficulty. There may for a short time be an escape of lymph from these incisions, owing to the division of the lymphatic channels, but this soon ceases. Oedema of the lower limbs after operation, due to the same cause, is sometimes troublesome, but, in the absence of infection, clears up in a few months.

Prophylactic application of x rays has been given as a routine after operation for about twelve months.

PROGNOSIS.

The prognosis after surgical treatment in mule-spinners' cancer is generally considered to be good, as in other types of skin epitheliomata.

In an investigation of the after-results following operative and x-ray treatment, Dr. John Bromley, of the x-ray department of the Manchester Royal Infirmary, has collected details relative to thirteen cases dealt with during the past two years, which he has kindly placed at my disposal.

After-Results of Operative and X-Ray Treatment of Thirteen Cases of Mule-Spinners' Cancer.

Alive and well...	...	4=31 per cent.
Have had recurrence	...	6=46 "
Dead	...	3=23 "

Such figures as these, although few in number, show conclusively the serious nature of this condition.

The cases under investigation have proved beyond doubt that deep x-ray therapy has been of little or no value as a prophylactic agent against glandular recurrence, and was of even less value in preventing local recurrence of the disease. In view of the fact that ordinary types of skin epitheliomata appear to give satisfactory results with both radium and superficial x-ray therapy, a series of cases of mule-spinners' cancer are now being treated with this type of radiation to see if the effects are better than those obtained after deep therapy. The best results were unquestionably obtained in those cases in which both the growth and the glands had been removed by the surgeon.

Finally, in considering the etiology of this disease, it appears likely that certain individuals possess a peculiar susceptibility to the irritant effects of mineral oil. Whilst this only affects a small minority of spinners—statistics showing that of the 25,000 adult males engaged in mule-spinning approximately 2.5 per 1,000 develop the disease—the problem presented merits consideration.

An important question arises as to whether a spinner who has once suffered from this form of cancer should be advised to return to his occupation in the mill on recovery. Apparently it can only be answered by examination of a series of statistics, and is at present engaging our attention. It should be made a rule that all patients shall attend for inspection, after operation, at regular intervals. In this way any recurrence of the cancer will be discovered at an early stage and curative operation will be carried out with a good chance of success.

REFERENCES.

- ¹ Southam and Wilson: *BRITISH MEDICAL JOURNAL*, November 18th, 1922.
² Morley, *Lancet*, December 2nd, 1911.

THE CLINICAL ASPECTS OF ACUTE PANCREATITIS.*

BY

HAMILTON BAILEY, F.R.C.S.ENG.,

GILLSON SCHOLAR, SOCIETY OF APOTHECARIES; SURGEON, DUDLEY ROAD HOSPITAL, BIRMINGHAM.

ACUTE pancreatitis, the most serious intra-abdominal inflammatory catastrophe, was first recognized by Dr. Fitz of Boston,¹ who communicated his observations to the New York Pathological Society in 1889. Since then other observers have added their quota, and to-day we are able to diagnose this disease in its typical forms, and to confirm the diagnosis scientifically.

FIG. 1.—Section of pancreas from a patient who died eight days after operation for acute pancreatitis. The pancreatic tissue is invaded by bacteria. A culture from the gall bladder at the time of the operation grew *Staphylococcus aureus* in profusion. (Author's case.)

The salient features by which the disease can be distinguished from other acute abdominal disasters are as follows: (1) The patient is usually fat; it would appear that obesity definitely predisposes to this disease. (2) There is a considerable accumulation of evidence to show that pancreatitis is recurrent—that is to say, that the same patient is the victim of several visitations of the disease. Dick² reports the case of a publican, aged 44, who had an attack of acute pancreatitis; it was treated expectantly, and he recovered. Two months later the patient returned with a second attack, and died twenty-four hours later. Timbrell Fisher³ describes the case of a man who had two attacks, separated by an interval of ten months. On each occasion the pancreas was drained and the man recovered.

A case under my own observation, in which I collected the past history, illustrates the recurrent nature of this disease.

The patient was a brewer's drayman. In 1907, at the age of 36, he was suddenly seized with acute abdominal pain. He recovered sufficiently to attend the medical out-patient department of the

* A paper read before the Birmingham Division of the British Medical Association.