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(v) Constriction of the herniated portion of the stomach, with its consequent subacute dilatation and the fact that, for anatomical reasons, the Ryle's tube could not reach the loculus to drain it, resulted in a condition of unrelievably vomiting. This corresponded with the clinical experience and the dramatic response to operation.

(vi) The crushing of the left phrenic nerve in the neck failed as a palliative measure because it was the tendinous part of the diaphragm which constricted the loculus of stomach and I suggest that the tendinous part cannot undergo muscular relaxation.

As a means of paralysing the diaphragm for purposes of easing the operative technique, crushing is best done at the time of the major procedure at the point where the nerve crosses the left auricle.

(vii) The post-operative attacks of dyspnea with sweating seem to defy explanation. The response to oxygen-carbon dioxide mixture was very rapid and relief was always complete within an hour. There was never a concomitant cyanosis so that I postulate a nervous rather than a mechanical cause.

Conclusions.

(i) Transpleural surgical approach described above for repair of diaphragmatic injury yields an excellent exposure, and the technique of suture is not then difficult.

(ii) When a wound appears to involve the abdomino-thoracic junction, the examination carried out at operation should include careful palpation of the diaphragm; this is because two wounds should be suspected in that organ when the direction of the track of the wound is from below upwards, on account of the anatomical considerations already put forward and corresponding with clinical experience.

I would like to express my gratitude to Colonel D. C. Monro, Consulting Surgeon to the Middle East Force, for invaluable criticisms and suggestions.

TROPICAL BUBO OR LYMPHOGRANULOMA INGUINALE.

By Lieutenant-Colonel F. A. R. Stammers,
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and

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To the Medical Officer newly arrived in the Tropics the first few cases of lymphogranuloma inguinale are liable to be most puzzling. These few notes are based on an experience of well over one hundred and fifty cases and may be of help to those serving on the West Coast of Africa for the first time.
Much confusion arises from the somewhat loose expression "bubo" which, strictly speaking, is an old-fashioned term for any swelling, usually glandular, whether in groin or elsewhere, whereas "Tropical Bubo" refers to a specific virus infection of venereal origin in which the groin glands become enlarged. It is better therefore to encourage the more general use of the alternative name "lymphogranuloma inguinale." The best description of the disease we have found is the monograph by H. Stannus, "A Sixth Venereal Disease," 1933, and we have derived much help from it. The following observations, however, are based entirely on our own experiences.

The disease is very common in the African native and is met with frequently amongst native soldiers, carriers and enrolled servants. It also occurs in Europeans, in whom there is a more severe general constitutional disturbance, and usually a more widespread involvement of glands.

Symptoms.—The disease commences within a day or so of intercourse as small painless, often transitory, papules, vesicles, pustules or ulcers on the glands, coronal sulcus or prepuce. They tend to heal quickly so that by the time the glands have appeared, some three to six or even eight weeks later, there is, more often than not, no trace whatever of the primary lesion. In other words the man reports sick because of the gland and not because of the genital lesion.

The first gland affected is at the middle of one or both groins or internal to it. There may be constitutional disturbance such as raised temperature and pulse, headache, malaise and constipation. In the European there may also be rigors, vomiting, cyanosis, slight jaundice, much pain and temperature as high as 103.5° F.

Examination at this early stage shows genitalia either free from any lesion or with small recently healed ulcers and a solitary, freely movable, non-adherent gland which may or may not be tender and spontaneously painful. The painless ones tend to resolve spontaneously, even without rest, and are therefore usually discovered by routine examinations only though others report wishing to know the significance of the gland. If spontaneous resolution does not follow, further changes take place and it is here convenient to suggest a classification covering the full progress of the disease, realizing that the patient may first report sick at any stage.

Classification.—Stage I: A firm solitary gland, adherent to neither skin nor deeper tissues, sometimes tender but often not, sometimes spontaneously painful. Skin not oedematous. No apparent causative lesion other than tiny ulcers or recently healed ulcers on the genitalia.

Stage II: Either firm solitary gland adherent to overlying skin and deeper tissues or with adjacent glands enlarged, often including the external iliac glands palpable as a mass above Poupart's ligament. The affected glands tend to coalesce. There is no more evidence of a primary lesion than in Stage I.

Stage III: The glands in the groin soften and fluctuate. If incised a cavity trabeculated by coarse, fibrous strands and containing yellowish,
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Sticky, glutinous material is found. If an affected gland is incised a few days before fluctuation has developed, i.e. at transition between II and III, it is found to be packed with tiny discrete abscesses. Again no primary lesion is obvious.

Stage IV: The softened gland-mass ulcerates through the skin and spontaneous fistulation, often multiple, occurs. Secondary infection is almost certain to follow and the sinuses take months to heal.

Diagnosis.—When faced with a native patient complaining of a swelling in one or both groins the usual alternative diagnoses have to be considered and it is not difficult to decide on "glands." The usual drainage areas must be examined and, where no lesion whatever is to be found and the glands are confined to the groins and fall into the descriptions given in the above classification, it is safe to diagnose lymphogranuloma inguinale, even though there be little or no constitutional disturbance. If there is evidence of small recently healed lesions on the genitalia or even open lesions, if they be tiny ulcers as opposed to the large ones of soft sore, hard chancre and yaws, there again the same diagnosis can be made.

It is, however, possible for a patient to suffer from soft sore, hard chancre or yaws or any combinations of these at the same time as from lymphogranuloma inguinale, and a gland mass in the groin under these circumstances cannot be so certainly diagnosed as the latter disease—it may be due partly to the specific organisms of other diseases and/or partly to secondary infection. The gland "stuffed" with little abscesses, however, is pathognomonic, and the later stage of the trabeculated cavity filled with slimy, sticky material is unlikely to be anything else.

Another difficulty in diagnosis is the frequency of leg-ulcers in native soldiers—the fruits of going unshod—but the affected glands are almost always femoral, not inguinal. In these cases of mixed infection the Frei’s test should be helpful but the only antigen available on the West Coast of Africa at the present moment is the crude form which is not completely reliable.

From time to time, axillary and cervical glands developing into characteristic lymphogranulomatous glands are encountered. They have been described in surgeons who have cut themselves when operating on cases of lymphogranuloma inguinale, and there is little doubt that others result from the same practices as do extra-genital chancres. Another difficulty is when the patient presents himself because of glands in the groin but examination reveals glands elsewhere too—all without any evidence of any source of infection. Here such conditions as tuberculosis, syphilis, Hodgkin’s disease, etc., have to be considered but there are, without question, other causes in West Africa of a generalized adenopathy as yet unsolved.

Treatment.—As has already been indicated many cases are only discovered at routine medical inspections because the affected glands are painless. Even those causing discomfort should be given a trial of simple
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treatment in their own unit lines. Every effort must be made to prevent spontaneous fistulation since this complication takes many weeks to recover. Even Stage I is treacherous since one can never forecast whether it will resolve or advance to Stages II and III. In a small series (twenty-eight cases) seen during the first three months of this year the average time in hospital was twenty-nine days, the longest being ninety days and the shortest eight days. There is no specific treatment and little guide is given in books of reference. One of us (W. A. L.) has recently applied a line of treatment with most promising results and this will be described in detail at the end of this paper. For the moment the different forms of treatment applied for the various stages of the disease will be related.

Stage I.—Unit medical officers to native regiments report that the majority of cases in the first stage resolve spontaneously; indeed, many never report sick and are only brought to light by routine examinations. Others, however, suffer pain and these should be given two or three days' rest in billets under the observation of their own medical officer as a number subside completely under such treatment. If they do not subside, or if they progress to Stage II, it has hitherto been the custom to send them into hospital. We have been seeking some effective form of treatment which can be given by regimental medical officers no matter what the stage, as this would save much bed space and much time. The sulphonamide group of drugs has proved disappointing. Arsenicals have no effect. One of us (F. A. R. S.) has tried iodides and mercury but these seem, if anything, to hasten progress to Stage III. Application of heat also tends to hasten softening. Surgical excision is certainly effective, the wound healing well and the man being fit for duty in two weeks after the operation, but hospitalization is necessary whereas an efficient chemotherapeutic measure, if available, would be more economical.

Stage II.—This stage, from the Army point of view, is the most difficult to treat as it rarely resolves (but see W. A. L.'s treatment) and it sometimes takes weeks before Stage III—which is easier to treat—is reached. Surgery is disappointing as, in our experience, the wounds tend to break down. An interesting point may here be mentioned. Occasionally, the original gland tends to remain almost discrete, lying somewhat apart from or attached merely by a pedicle to the much larger group of secondarily involved glands, including the external iliac group, and its surgical removal will sometimes lead to rapid subsidence of the main mass. For this reason it has been called "the feeding gland" and we can confirm this observation. Sulphonamides and arsenicals are ineffective and iodides and mercury as also the application of heat tend to hasten progress to Stage III.

Stage III.—Once this stage has been reached spontaneous resolution will not take place but simple interference causes it to settle quite quickly. When first meeting these cases it is very tempting to incise boldly as for any other abscess but the result is disappointing and secondary infection is almost bound to follow, the wound discharging for weeks. The contents
of softened lymphogranulomatous glands are sterile and need as careful guarding against secondary infection as do tuberculous ones. The methods we have employed have been:

1. Aspiration at several points and on two or three occasions.
2. Making a small opening with a tenotomy knife, sweeping the blade round inside to cut the trabeculae and packing with iodoform gauze or B.I.P.P.
3. Using a setan—a silk worm stitch does well.

In all methods the skin must be sterilized and dressed with sterile dressings as for a full surgical operation.

Once the contents of the necrotic glands have been evacuated the mass subsides quite quickly and leaves a thickened scar in the groin. There is not much to choose between the above three methods of treatment.

Stage IV.—The difficulty here is the secondary infection and for this reason chemotherapy may offer success but we have had to recommend discharge from the Army in a number of cases that have continued as open wounds in spite of many weeks of varied forms of treatment.

**Treatment by Antimony Compounds (W. A. L.).**

The aim of this line of treatment is to find a form of therapy which can be carried out without hospitalization of the patient, thereby saving hospital beds, time and expense in addition to conserving man power within the individual units.

For observation and experimental purpose this treatment was carried out in hospital in a series of nearly one hundred cases. The patients were not confined to bed and were utilized for light fatigue duties during the whole time they were undergoing treatment. This suggests that such a line of therapy could be carried out at regimental medical inspection rooms, camp reception stations or hospital out-patient departments, thereby leaving hospital beds available for casualties and the more seriously sick patients.

The treatment has been mainly carried out on African patients but also in a few European, where the general constitutional disturbance is usually more marked, but this latter fact does not seem to render out-patient treatment impracticable.

The antimony compounds used were lithium antimony tartrate-anthiomaline (May and Baker)—administered intramuscularly and massaged into the buttock—or sodium antimony tartrate given intravenously. The former compound was preferred and the latter used only when anthiomaline was not available. Intramuscular anthiomaline was given two or three times weekly commencing with a dose of 0·5 c.c. and increasing this dose by 0·5 c.c. up to 2·0 c.c. dose for a maximum total of twenty injections. Normally only about ten injections were required indicating the dose of 1 gramme of the compound or the equivalent of 0·1 gramme of antimony metal.

Intravenous sodium antimony tartrate was used as a 1 per cent solution in distilled water, sterilized by boiling, the first injection being 1·5 c.c. and subsequent injections 3·0 c.c. twice weekly. In this series of cases no evil
results or complications of such dosage occurred and all the patients were able to continue their light duties in the hospital.

In the series of cases so treated not one case required surgical interference and several cases, in which fistulae or ulceration had resulted following either excision or incision and drainage of the glands, healed completely and rapidly with eight to ten injections over a period of three weeks.

In other cases, where primary ulceration had occurred, healing was effected with corresponding ease and rapidity.

In nearly all cases the final result was subsidence of the bubo or swelling with some residual induration, the result of fibrosis on the course of healing in all probability, and the complete loss of pain. To the African soldier the disappearance of pain was tantamount to cure and, as this invariably occurs before the disappearance of the swelling, repeated requests for discharge from hospital were frequently forthcoming from an early stage in the course of treatment.

Where ulceration and fistulae had occurred, particularly with secondary infection, sulphonamide saline packs were applied locally in addition and, where pain in the swelling was a prominent feature, local heat in the form of fomentations, saline compresses or antiphlogistine were also used but could be discontinued in less than a week as a rule.

The average length of time required to effect resolution in these cases, the majority of which were Stage II or III, was about four weeks during which time the patients were not confined to bed or the ward and were able to continue with light duties. This line of treatment is still being pursued and careful watch being kept for relapses or complications such as fistula formations and ulcerations.

In some cases softening occurs during the course of treatment and aspiration of the yellow fluid is easily carried out and appears to hasten the end-result. Where softening is the result of the type of change resembling caseation seen in Stage III cases, absorption or resolution appears to occur without any local interference, the danger of which is fistula formation.

We wish to thank Brigadier R. A. Hepple, M.C., and Colonel K. A. M. Tomory for permission to forward this article for publication.

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DECK ANKLES.

By Captain W. F. L. Fava,
Royal Army Medical Corps.

My attention was first drawn in August, 1941, aboard a troopship to the condition which forms the subject of this article about the tenth day on the outward voyage to the East from England. At this time about twenty cases, all with the same complaint, reported sick. During the ensuing few
Tropical Bubo or Lymphogranuloma Inguinale

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