

SOME SURGICAL ASPECTS OF THE AFRICAN SOLDIER.

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THESE observations are based on two years experience as Surgical Specialist and later as O.C. Division in Military Hospitals in East Africa, where the bulk of patients are native soldiers or Askaris.

It is a novelty for the surgical newcomer to see in his ward rows of shining black faces all turned expectantly towards him, with black shaved heads contrasted against the white bed linen. He is first at a loss and will remain handicapped till he has acquired some familiarity with the personality and background of the person whom he has to treat. The first essential in successful treatment of the African is to know something about him.

An initial problem is the language. The natives speak only Swahili and, till the newly arrived M.O. has learnt a smattering of this language, he is very much handicapped. But Swahili is not difficult to learn and with application sufficient is soon picked up to ask the usual questions. In surgery most of the conditions are self-evident such as tumours, traumatic conditions, herniæ, inflammations, etc., so that a simple history will suffice.

The Askaris are recruited from the villages in the hinterland and few have been in close contact with Europeans before. They are a fierce and war-like people as their record for many centuries has shown and, with training, they become first class soldiers. They fought remarkably well in the last war and in this war, in the Abyssinian campaign, and now they are taking their place in the fight against the Japs.

The native has natural good manners; he recognizes authority and is very obedient. He is proud of being a soldier and *esprit de corps* is high. It is not unusual to see him practising drill in his off-duty time so that extra drill as a punishment loses its effect as his friends standing by often take part too out of keenness. The Askari comes into the Service from a primitive background. Living in a mud hut with no furnishings except for a few skins on the ground as a couch and wearing only a loin cloth or an animal hide, he knows nothing of hygiene or sanitation. His diet consists mainly of *posho*—a ground maize meal, and vegetables, fruit and a certain amount of meat when he can get it. He attains wonderful physique and muscular development and is very energetic but, of necessity, in wartime the general standard of recruits is lower than in pre-war days. All Askaris look alike at first but distinctive individual and tribal differences soon make themselves apparent.

The African makes an excellent patient and most M.O.s and Nursing Sisters prefer treating him to the European when given a choice. The reputation of the European for fair dealing stands high with the native so that he places every confidence in the hospitals. He is very patient and uncomplaining and is inured to suffering and so does not make the frequent irritating demands on the medical and nursing staffs which sometimes make the European patient tiresome in the tropics. Operations are readily accepted for long experience has proved the benefits of them. Now and again one meets the African who refuses operation but, with tactful handling and reason, consent is usually obtained.

Practically all the diseases seen are organic but now and again one meets functional conditions. Malingers do occur but they are usually not difficult to treat. The native mind is undeveloped, both by nature and lack of education, so that its approach to most problems is childlike. One therefore deals with the native as one would with a child. The complexes and inhibitions of civilization are absent so that psychotherapy often consists merely of a sympathetic unravelling of childlike troubles.

The Askari is so anxious to get well quickly that it is difficult to keep him in bed when he feels well enough to get up. For example, it is not unusual, in spite of warnings to the contrary, to see a herniotomy patient wandering out to the latrine a few days after operation. Fixation apparatus for limb fractures is occasionally found intolerable and I have seen Steinman's pins and plaster of Paris removed during the night. It is necessary to impress on patients, who have never slept in bed before and who are unused to idleness when they feel fit, of the necessity for lying in bed. On only two occasions have I heard an African express a desire to return to his native village for treatment by his own witch doctor rather than accept orthodox professional treatment. Both these cases were adamant and their complaints were of such a nature that they had to be boarded out of the Army. In East Africa the witch doctor is not as powerful a personage as he is in some other parts of Africa. Will-power plays a great part in the African's recovery. One sees patients who are desperately ill recover in spite of the odds against them and, on the other hand, patients who insist that they are going to die while suffering from a comparatively mild ailment and who do so in spite of all treatment.

In taking a history there are some minor difficulties. No African ever knows his age but, as all soldiers are young adults between 18 and 35, this is not important. He is also very vague about time. Perhaps one reason for this is the absence of seasons and the fact that the sun rises and sets at practically the same time of the day all the year round so that all days and seasons seem very much the same.

Many surgical conditions in the European are easily recognized by the contrasting colours of the skin, the erythema, early oedema of acute infections and the dilated bluish veins over neoplasms. A black crust over the crater of a boil with its red angry base stands out on a white skin. Such signs are by no means so obvious in the black African skin. The normal healthy African has a smooth shiny skin with a sheen like satin except for the legs which are coarse and roughened by sustained trauma and the ingrained dirt of going bare-footed. Nevertheless the African keeps his person very clean and washes himself all over on all possible occasions. Scars are not obvious in a black skin unless they are keloid, the tendency to which is well known in the African, but a thin scar can be recognized by its silvery colour and the harsh feel as compared to the surrounding smooth skin.

The surgical problems of the African are in many respects different from those of the European; many familiar conditions are rare and there are many unfamiliar ones which are common.

ABDOMINAL CONDITIONS.

In the Military Hospital at home appendicitis, perforated peptic ulcer and herniæ are the common abdominal diseases. The acute appendix is the usual emergency and perforated duodenal ulcer and a strangulated hernia are seen occasionally. In the Africans, strangulated hernia has the same incidence as in Europeans but the acute appendix and the perforated ulcer are rare.

In my two years' tour of duty in East Africa I had to deal with only two cases of acute appendicitis in Africans. But appendicitis must be borne in mind, even though it is rare, because malaria and dysentery often simulate it closely. A blood slide (taken as a routine for all hospital admissions), leucocyte count and, if time permits, stool examination are needed before the diagnosis of appendicitis is made.

The acute abdominal catastrophe in the African usually lies elsewhere than in his right inguinal fossa. It is possible that the rarity of acute and chronic appendicitis is due to the different diet and also to the fact that the squatting position for defæcation is adopted, a posture which may help to prevent fæces being squeezed into the closed and compressed appendix.

Volvulus is not infrequent, perhaps because the diet consists mainly of *posho* which is very bulky and is eaten only twice a day in large quantities. The result is that the enormously loaded small gut tends to twist on its mesentery particularly if a heavy meal is soon followed by exercise. Mesenteric thrombosis and death inevitably follow without early

operation. One case I saw had the whole of the small intestine from the duodeno-jejunal flexure down to the ileo-cæcal junction twisted upon itself. The whole bowel was gangrenous and the patient died soon after the unravelling.

Worms such as ascaridis and tænia may also cause obstruction and volvulus. Africans on the whole tolerate abdominal operations very well.

LIVER ABSCESS.

Amœbic liver abscess is often seen. It comes on at any time after the dysentery. It is not easy to diagnose owing to the great variety of symptoms that it may produce. The typical cases present no great difficulty. There is epigastric discomfort, sharp stabbing pains in the hepatic area, intermittent temperature and sweating. The liver is enlarged, there is loss of weight and the leucocyte count is high.

Unfortunately all cases are not typical. In some instances the initial symptoms are much more urgent and the disease progresses or is so subdued that the diagnosis is missed until the abscess bursts into the lung or bowel or a fluctuating tumour presents in the right hypochondrium. Occasionally the diagnosis is only finally cleared up on the post-mortem table.

There is not one of the cardinal signs of liver abscess which may not be absent. There may be a normal temperature in a patient with a large collection of pus in the liver or temperature up to 104° may be observed. Painful swollen joints may occur and the cervical and axillary glands on the affected side may be enlarged. Sometimes the symptoms may be all referable to the chest, with a painful cough, shallow respirations, friction rubs and pneumonic signs at the right base. The significance of this basal pneumonia—a condition which often accompanies suppurative hepatitis—may be misinterpreted and so lead to an error in diagnosis. The fever may be put down to malaria which often co-exists and malaria is occasionally known to give rise to hepatitis of a non-suppurative character. Other conditions causing confusion in diagnosis are gall-bladder disease, subphrenic abscess following appendicitis or perforated peptic ulcer, syphilis of the liver, encysted empyema, right-sided pyelitis and perinephric abscess, suppurating hydatids, kala-azar, scurvy, undulant fever and ulcerative endocarditis.

The presence of *E. histolytica* cysts in the stool is suggestive but by no means conclusive of amœbic abscess. They are present in about half of the cases with an abscess.

Surgical treatment is necessary when one suspects that an abscess has formed. If medical treatment has given no relief it is necessary to locate the pus and evacuate it. In the first instance this is always done by means of the aspirating needle and the surgeon must be prepared to proceed forthwith with the operation of drainage.

PRIMARY CARCINOMA OF THE LIVER.

In England primary carcinoma of the liver is rarely if ever diagnosed. But it is not uncommon in the African. A patient with painless persistent progressive jaundice with enlargement of the liver almost certainly has a primary carcinoma of the liver. In the European with similar symptoms one would suspect carcinoma of the head of the pancreas. Exploratory operation reveals multiple malignant nodules scattered diffusely throughout the liver. The diagnosis of carcinoma of the liver can be made without hesitation in Africans with painless jaundice and in whom ordinary gall-bladder investigations have proved fruitless. Death ensues within a few weeks or months.

MALARIA AS A SURGICAL PROBLEM.

Malaria is a medical disease but the surgeon should be familiar with its relation to surgery. I have mentioned that all cases admitted to hospital, for whatever cause, have blood slides taken as a routine and this has proved of great help in a difficult case. The question of malaria arises in the following types of cases: (1) Those in whom it is not certain whether the patient is suffering from malaria or a condition requiring surgical treatment. (2) Those

cases known to have malaria and receiving treatment for it who develop complications of a surgical nature. (3) Cases admitted for traumatic lesions or undergoing surgical operation who develop malaria while in hospital.

In the first group are those cases of malaria which present as an acute abdominal emergency. The initial symptom is pain which comes on suddenly and is very severe. The pain may be localized to one particular region of the abdomen but more often it is generalized and comes on in sharp paroxysms with remissions. It may resemble a colic, either renal, intestinal or gall-stone. On examination the tenderness may be general or local but a distinguishing feature from a true peritoneal inflammation is that superficial palpation is more tender than deep palpation. This is a very important point in helping to decide on a given case. There may be local or general rigidity which fluctuates from board like rigidity to slight guarding but is not persistent and continuous as in a true abdominal condition. An enlarged spleen does not help for, in most Africans, the spleen is palpable owing to previous attacks of malaria. The patient himself is prostrated and looks ill. Fever is present and the pulse-rate may be slow or very fast. The bowels may be costive or diarrhoea may be present. Vomiting is often a symptom.

Depending on the site of the pain and tenderness and other symptoms the patient may present a picture either of acute appendicitis, perforated ulcer or acute gall-bladder disease. But there is something in the picture which does not properly fit into the diagnosis; the pain is too sudden or too severe; the tenderness and rigidity too marked or variable in intensity or location; the onset either too gradual or too catastrophic; and there are general symptoms such as rigors, headache and backache. Nevertheless it is often not easy to make up one's mind.

The second group comprises cases undergoing treatment for malaria which the surgeon is asked by his medical colleague to see. One must remember that quinine and mepacrine sometimes cause intestinal colic and abdominal symptoms suggestive of a peritoneal or bowel lesion. It is dangerous to conclude that because a patient has "proved" malaria it is impossible for him to have an abdominal condition as well.

The third group are those in which trauma, either accidental or surgical, precipitates an attack of malaria. Patients who have had the disease before may get another attack following any trauma, in spite of prophylactic quinine or mepacrine. Pain and hæmorrhage are aggravated by malaria.

Malaria is apt to follow fractures and injuries to joints in particular. The malaria parasites live in the bone-marrow and when the latter is damaged the parasite is released into the blood stream. This, coupled with the lowered resistance following an accident, induces an attack.

Cerebral malaria is extremely serious; if it is not recognized and treated early it ends fatally. Should a patient with a head injury develop cerebral malaria he is indeed in a perilous state for the cerebral symptoms may be put down to the injury whereas the parasite may be wholly or partly responsible.

Another unfortunate combination is that of blackwater fever with an injury which may have caused damage or suspected damage to the kidneys. The dark urine of blackwater fever may be thought to be due to the passing of old blood and its true cause not suspected. The microscope may assist by revealing the presence or absence of red blood cells. Even with energetic medical treatment cerebral malaria and blackwater fever both carry a high mortality.

FILARIASIS.

Filiariasis is due to the invasion of the lymphatic system and connective tissues by certain nematode worms. The adults of both sexes of these worms find their way from the lymphatics and connective tissues into the blood stream where they are capable of living for a considerable time without further development. The most important of these worms is the *Filaria sanguinis hominis* (bancrofti) because it lives principally in the blood of man. The parent filariæ are long hair-like transparent nematodes 2 in. to 3 in. in length and the two sexes live

together coiled intimately about each other. They may be found in bunches tightly packed together in cyst-like dilatations in the distant lymphatics or, more loosely, in lymphatic varices or in the large lymphatic trunks between the glands, in the lymphatic glands themselves or even in the thoracic duct. The adult female gives birth to an unending stream of living embryos or microfilariae which are carried in the blood where they can be found on examination as snake-like organisms constantly wriggling. If the blood of the patient is examined in the daytime the microfilaria is rarely seen but, towards evening, it appears in gradually increasing numbers reaching a maximum between the hours of midnight and 2 a.m. and decreasing towards morning. This is called Filarial Periodicity. Blood slides must be taken at 2 a.m. to search for their presence. Microfilariae are destroyed in the substance of the lymph glands and so cause changes there; while the adult worms during life and after death (because of calcification) cause obstruction of the lymph vessels and so contribute towards lymph stasis. During their temporary absence from the general circulation in the daytime the microfilariae retire to the large arteries and the lungs. The intermediate host is the mosquito: *Culex*, *Aedes* and *Anopheles*.

There are two main types of disease caused by the presence of the filaria in the lymphatics, one characterized by varicosity of the lymphatics and the other by more or less solid oedema. When the lymphatics become obstructed a compensatory lymphatic circulation eventually becomes established with a dilatation in the distal area. This leads to lymphatic varices of various kinds. When the thoracic duct is the seat of obstruction the abdominal and pelvic lymphatics and those of the groin, scrotum and abdomen are affected. The result may be a "lymph scrotum" when the scrotal skin is involved or "varicose" groin glands when the groin glands are involved.

When the lymphatics of the bladder and kidney become over-distended and rupture, chyluria results; when those of the tunica vaginalis rupture, hydrocele due to chyle is seen; and, in the peritoneum, chylous ascites occasionally occurs. Large groups of varicose glands are present in the axilla, groin or upper part of the thigh. Other conditions caused are lymphangitis, synovitis, superficial and deep lymphatic varix, funiculitis, orchitis and elephantiasis of the scrotum, arm and leg. The worm may be killed by injury or through other causes and will then act as an irritant and give rise to abscesses which occur in the limbs or in the scrotum and may require incision. Such abscesses are not to be confused with pyomyositis of which more will be said.

Varicose groin glands are very important to the surgeon. The patient is, as a rule, unaware of their presence until they reach a fair size. They appear as soft swellings up to the size of a large orange, often bilateral, and the inguinal group alone or femoral group or both may be involved. They are easily mistaken for hernia. The essential differences are that they reduce slowly on lying down and not rapidly as in hernia, there is no gurgle and no impulse on coughing or perhaps a very slight one. When the patient stands up the swelling slowly reappears if pressure is applied over the inguinal and saphenous openings.

Filarial orchitis, funiculitis and hydrocele may co-exist or each may be present alone. The orchitis eventually is accompanied by a hydrocele. The swollen testis has to be differentiated from testicular enlargement, due to other causes, syphilis, gonorrhoea, tuberculosis and *B. coli*, etc. Filarial infiltration of the cord may be a generalized or a localized swelling. There may be a single nodule the size of a pea or a large number of them causing a nodular irregular thickening of the whole cord. The nodules may be hard or there may be a group of soft swellings—lymphatic varicoceles—or even a large cystic dilatation—lymphocele. The spermatic veins are often the seat of chronic thrombo-phlebitis. The fluid removed by tapping the hydrocele is cloudy and on examination shows a number of polymorphs and red cells with microfilariae inside. The tunica vaginalis shows nodules in its walls containing calcified remains of adult filaria in many cases.

Synovitis of the knee as a symptom of filariasis is very common in Africans. There is no history of injury or strain and the patient presents himself with temperature, effusion into

the joint and later thickening of the synovial membrane and peri-articular tissues. The swelling recurs without any definite cause.

Early elephantiasis only is seen in the Army but gross elephantiasis of the scrotum and limbs are seen in the civilian population.

ONCHOCERCIASIS.

The *Onchocercus volvulus* is morphologically similar to the *F. bancrofti* and it gives rise to subcutaneous fibrous tumours, varying in size from a marble to a hen's egg, which are hard, painless, fairly movable and lie just under the skin. Common sites are the chest wall, popliteal space and around the elbow. The intermediate host is a species of sandfly or buffalo-gnat. The tumours when first seen are thought to be fibromas but one soon learns to recognize them and diagnose them correctly. They are treated by excision and the swelling is found to consist of an outer thick firm fibrous capsule containing yellowish fluid and the coiled worm.

GUINEA-WORM (*D. medinensis*).

This is a very important cause of invalidism and hospitalization among African soldiers. The patient presents himself either with diffuse cellulitis of the calf or else he has a long wavy serpentine "cord" lying just under the skin of the leg something like a varicose vein. This is due to the guinea-worm.

The female guinea-worm enters the intermediate host—the water-flea or *Cyclops quadricornis*. The water-flea is then swallowed in drinking water and the hydrochloric acid of the stomach kills it. The larvæ escape and make their way into the tissues. They take about a year to reach the reproductive stage and the resulting embryos have to escape into water. In order to accomplish this, the adult female makes her way down the lower limb of the patient. She comes to the surface of the limb and lies under the skin where she is visible as a serpentine cord. She breaks through the skin causing a blister which ruptures with the escape of a little milky fluid. The worm then protrudes just through the skin surface and liberates embryos. In order to extract the worm from the tissues, a match is tied to it and pulled gently a little at a time each day. The application of cold water hastens and encourages the process. By daily traction the worm can be wholly removed; it may be as much as four feet in length and as thick as a violin string. If it is broken off by too harsh pulling the young are evacuated from the broken worm into the tissues and a severe abscess results.

PYOMYOSITIS.

A number of patients are admitted to hospital ill with fever, general malaise and complaining of deep seated pain in the thigh, calf, buttock or shoulder. The history is of a few days' duration and deep palpation of the affected part elicits exquisite tenderness. The tenderness is such that the patient barely allows the part to be touched at all. The general appearance of the part may show only a slight fullness compared with the other side. The patient looks and feels ill. His leucocyte count is raised and X-ray of the limb shows no bony change. The case is one of pyomyositis, an abscess in the deep muscles. Fluctuation is rarely seen and if the nature of the case is in doubt and treatment delayed the abscess gradually tracks up to the surface when the overlying skin becomes brawny and œdematous. Aspiration may be done but, usually, once the cases are recognized, incision is carried out. Skin and fascia are incised and the underlying muscle fibres split following the clue of œdematous or indurated tissues, if present. A sinus forceps is pushed through the incision, if necessary to the full length of the blades. A sudden large gush of pus under tension shows that the abscess has been found. The opening is widened with the finger or scalpel if need be and the abscess cavity is laid open. Sometimes these abscesses track up and down a limb close to the shaft of the bone. The most common sites for pyomyositis are the thigh muscles, the glutei, adductors and pectorals, biceps, deltoid and forearm flexors. The organism in all cases is the staphylococcus. Healing is usually rapid once good drainage is established.

Multiple abscesses occur in about 25 per cent of cases and of these a small percentage develop pyæmic abscesses with a fatal result. Chemotherapy is of great assistance in these multiple and pyæmic cases. The ætiology is obscure. One can postulate a staphylococcal infection from the blood stream into a hæmatoma or bruise, due to trauma or scurvy. Investigation of a number of cases of pyomyositis reveals *F. bancrofti* in the blood but the majority of patients do not harbour it. The condition is one peculiar to the African; Europeans in the tropics rarely, if ever, suffer from it.

SUMMARY.

- (1) An account is given from the surgeon's point of view of the African as a patient and some of the surgical problems he presents.
- (2) Abdominal conditions peculiar to the African are described including an account of liver abscess.
- (3) The relationship of malaria to surgery is discussed.
- (4) Filariasis and pyomyositis are briefly considered.