if hypotension is prolonged. (In practice this has very rarely been necessary.)

Failure to achieve sufficient hypotension, or to maintain it, after autonomic ganglion block may lead to trouble. If bleeding appears to be severe, replacement therapy is the only measure likely to remove the danger to the patient. Fortunately, failure in suitably chosen cases is infrequent, and the results of failure are rarely serious. I personally have been worried by severe bleeding once only.

Summary

The production of hypotension during surgical operation by blocking the autonomic ganglion with a suitable methonium drug can produce operating conditions of great attraction to the surgeon, can considerably reduce bleeding and therefore add to the patient's safety and post-operative health, and seems to be a safe procedure in skilled hands and with constant observation. It must be realized that posture plays a large part in producing the desired level of hypotension, and therefore the technique is unsuitable for certain operations. Some individuals also appear unsuitable, and the individual reaction to the drugs used so far is variable.

It must be mentioned that success, or otherwise, in reducing haemorrhage in each individual case has been assessed entirely by the surgeon. Well over three-quarters of the 250 cases have been categorized as "good."

ADDENDUM

Since this paper was completed the subject has been debated at a meeting of the Anaesthetic Section of the Royal Society of Medicine, with papers from Drs. Enderby and Armstrong Davison. Although the work already done in this field is consequently more widely known, I feel that attention to the basic principles of the technique and the importance of careful selection of suitable cases cannot be overemphasized.

Recently a case has been brought to my notice where a patient died two days after an operation for removal of a malignant tumour involving skull and meninges. Hexamethonium bromide had been used to control severe haemorrhage. The patient's blood pressure apparently never rose above 80 mm. systolic during the two post-operative days, nor was any adequate attempt made to raise it. Anuria was absolute for the first 24 hours, but the kidneys excreted some urine during the second 24 hours. Two errors of technique seemed to me to have been made in this case. First, the drug was used late to control already established haemorrhage, instead of at the beginning to prevent bleeding. It is possible that the circulating blood volume had already been dangerously reduced by the time it was used. Secondly, hypotension was allowed to persist for too long without attempts to correct it by posture and methylamphetamine hydrochloride. I think it is absolutely essential, in using this technique, to maintain a full circulating blood volume and full oxygenation, and to use an adequate dose of the drug to produce successful block and consequent vasodilatation. If extreme hypotension is prolonged beyond a few hours, measures must be taken to correct it.

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TUBERCULOUS LYMPHADENITIS IN THE NIGERIAN AFRICAN

BY

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Old-established conceptions of the pathogenesis of tuberculous lymphadenitis still appear to hold the field. Thus Boyd (1947) states that the cervical lymph nodes may become infected through one of two routes: either by the blood stream, in which case scattered nodes are attacked, or by the lymph stream. In the latter, which is much the commoner mode of infection and accounts for 90% of cases, the cervical nodes become involved via the lymphatics from a primary tuberculous focus in the tonsils, adenoids, or teeth caused by ingestion of contaminated material, notably milk from tuberculous cows.

Mitchell (1917), in Edinburgh, found 88% of cases of tuberculous adenitis in children to be due to the bovine bacillus, and demonstrated tubercle bacilli in 20% of samples of the local milk supply. In New York, Park (1910) found 34% of all cases, and 54% in children under 5, to be of bovine origin. In corroboration of the path of infection microscopical evidence of tuberculosis in the tonsils has been reported in 38% of cases, while tubercle bacilli have been demonstrated in the decayed dental root pulp of those harbouring tuberculous nodes. It should, however, be pointed out that the discovery of a tuberculous focus in a tonsil is by no means proof positive that this was the original portal of entry. A lymphatic organ such as the tonsil, endowed with generous lymphatic communications, might conceivably undergo retrograde infection from previously tuberculous cervical nodes.

There seems, however, to be considerable support for this conception in the case of bovine infection, though it does not appear to be applicable to all cases of tuberculous lymphadenitis. In civilized countries an increasing attention to the care of herds and to pasteurization has of recent years considerably reduced the proportion of cases attributable to bovine infection. In Southern Nigeria bovine infection is a rarity, but for a different reason. Relatively few cattle are driven down from the north, because tsetse belts have to be traversed *en route*, while fresh milk and butter do not enter into the dietary of Southern Nigerians. Peripheral tuberculous lymphadenitis among the latter may thus be taken as almost invariably due to infection with the human bacillus.

Some observations on the features of the disease in 51 consecutive cases seen in Lagos are here presented and the implications discussed. In 24 cases the diagnosis was made on clinical grounds alone, always quite typical, and in the majority with associated sinuses, cold abscess, pulmonary tuberculosis, or pleural effusion. In five cases the diagnosis was supported bacteriologically by gland puncture, in 10 cases histologically by gland biopsy, and in 12 by the macroscopic appearance at surgical excision with additional histological confirmation in five. Tuberculin tests were not carried out in this series.

Clinical Data of Present Series

Of the 51 cases 32 were male and 19 female; by European standards a relatively large number were

adult, 17 (33.3%) being over 20 (see Table). Inquiry was made whether there had been any recent death in the patient's household, or whether any member suffered from persistent cough with expectoration or from enlarged lymph glands; but in only two cases was any possible evidence of a recent tuberculous asso-

Details of Cases

Age Group:	0-4	5-9	10-14	15-19	20-29	30-39	40 and Over	Total
Male	2	8	7	6	6	2	1	32
Female	4	3	3	1	6	1	1	19
Total	6	11	10	7	12	3	2	51
Associated dental or faucial sepsis	—	—	—	—	2	2	—	4
Associated trouble with dentition	—	2	—	—	—	—	—	2
Associated lactation	—	—	—	—	2	1	—	3
Radiological evidence of old pulmonary or hilar gland focus	1 (17%)	3 (27%)	3 (30%)	3 (43%)	5 (42%)	2 (66%)	1 (50%)	18 (35%)
Ditto in 100 controls	10%		22%		28%		24%	
Cold abscess and/or sinuses	1	1	3	4	4	1	2	16
Coincident pulmonary tuberculosis	1	—	—	—	2	—	—	3
Pleural effusion	1	—	1	—	—	—	—	2
Tuberculous meningitis	—	1	—	—	—	—	—	1
Enlarged thymus	1	3	—	—	—	—	—	4

ciation elicited. One stated that a brother had died two years previously at the age of 14 suffering from cough, another that two members of his family had enlarged lymph glands similar to his own. Twenty-seven of the patients took their food by dipping their fingers into a communal family food-bowl; the remaining 24 ate from a separate plate. Twenty-eight patients from time to time consumed tinned milk, and eight of these also on occasion had cold-store butter, but only two admitted to the consumption of fresh milk.

In contrast to this lack of any recent source of tuberculous infection, in four cases the onset of an upper cervical or submaxillary lymphadenitis was definitely associated with a homolateral dental or alveolar infection; in three cases an axillary adenitis was unmistakably connected with lactation; and in two cases a troublesome erupting tooth clearly heralded the onset of a submaxillary adenitis. In 14 other cases there was coincident dentition, but no such close and clear causal connexion between the latter and the lymphadenitis. Radiological evidence of a pre-existing primary complex, or calcified foci in lungs or hilar glands, was found in 35% of all cases, as opposed to 21% in a series of 100 comparable controls.

As regards the physical findings, it is notable that more than one group of glands was involved in 30 of the 51 cases. Although various groups might become affected in rapid succession, as a rule one group was primarily involved, with subsequent spread at intervals and in lymphatic continuity to other groups. Groups are defined broadly as cervical, axillary, or inguinal; and unilateral involvement of submaxillary, jugular, accessory, and supraclavicular glands is classified as disease of one group only. In a proportion of cases there was, in addition to the glands manifestly tuberculous, a slight or shotty enlargement of glands in other, remoter groups; it was thought that this was probably in the nature of a focal reaction to products of the tubercle bacillus rather than an active tuberculous infection.

Although the cervical glands were most often initially affected, the axillary glands were primarily involved in seven cases, and involved secondarily and in conjunction with other groups in a further 12, while the inguinal glands were the primary offenders in three instances and secondarily involved in another three.

Any type or degree of the disease might be met with at any age. In children under 5, however, there was a tendency to a very massive bilateral cervical glandular enlargement, giving a bull-necked appearance, often with oedema of the superficial cervical tissues, and sometimes with an associated axillary lymphadenitis. This type appears to reflect a rapidly developed and marked sensitization to the products of the tubercle bacillus, possibly the result of an early and heavy primary infection. The general condition of these children was, however, usually fairly good and the response to conservative lines of treatment slow but satisfactory.

Cold abscess and sinus formation, which were noted in 16 cases, occurred in the younger age groups as a rule only after fairly prolonged disease, but often in the older age groups after disease of much shorter duration.

There was coincident pulmonary tuberculosis in three cases—bronchopneumonic in patients aged 3 and 24, and upper lobar and probably pneumonic in one aged 27. While the later cavitative type of pulmonary tuberculosis is not associated with a lymphadenopathy, the bronchopneumonic and pneumonic types almost always are. Thus no case presenting with tuberculous lymphadenitis must be judged simple and of good prognosis until associated pulmonary disease has been excluded.

Two children, aged 4½ and 12, had coincident pleural effusions. One child aged 6, who had apparent meningeal involvement when first seen, developed a hemiplegia and died within a few days. Four children under 10 had greatly enlarged thymuses.

Treatment

Most cases without sinus formation responded very favourably but with varying celerity to conservative measures, a full nutritious diet, cod-liver oil or calceferol, and occasionally a period of rest in hospital. Cold abscesses might require aspiration. In the presence of sinuses response to conservative treatment was slow and unsatisfactory, and if only one gland group was involved complete surgical excision was found to be most successful. Such excision was carried out in 12 of these 51 cases because of sinus formation or slow response to conservative measures, or because of involvement of a small localized gland group. While in the majority healing was prompt, in a few cases areas of tuberculous ulceration in the scar led to more protracted but eventually sound healing. Surgical measures of less extent were never employed.

While the immediate results of surgical excision are excellent, it should be remembered that the period of sensitization of the lymph glands may be prolonged, and that after complete eradication of the involved gland group other groups may show the disease months or years later. Thus one patient in this series, for whom I had performed a complete left cervical clearance over two years previously, returned with tuberculosis of the upper right cervical glands with one cold abscess. The recurrence was of recent origin and responded well to conservative measures. In the chronic case with involvement of many gland groups, multiple sinuses, cold abscesses, secondary infection, and general debilitation,

surgery is excluded, conservative treatment often fruitless, and the course usually progressively downhill.

Discussion and Conclusions

It is apparent that clinical tuberculous lymphadenitis does not represent a primary infection with the organism. The glandular component of a pulmonary primary complex consists of a very limited enlargement and caseation of only those few nodes directly draining the lung focus, for the lymphatic glands have as yet acquired no sensitization to the products of the tubercle bacillus. On the other hand, the glandular enlargement of a clinical tuberculous lymphadenopathy, which may be very considerable or even massive and involve a whole group or several groups of glands, indicates that a degree of such allergy has now developed. The time that must elapse between the primary infection and full development of sensitization varies, possibly according to the dosage of the initial infection, but may be fairly short, as suggested by a case in this series that first exhibited lymphadenopathy at the age of 18 months. Once allergy is attained, the interval before it again wanes and desensitization is achieved is also variable. Thus three patients had cervical scars, attributed by them to incision or enucleation of tuberculous glands by native "doctors" five, six, and seven years earlier respectively, and this probably represents about the longest duration of sustained glandular sensitization.

The source and route of the primary sensitizing infection merit consideration. Despite the absence of milk and milk products from the dietary, the use of the communal food-bowl offers a possible alternative mode of infection by ingestion in 27 of the 51 cases. That the alimentary route is not the probable one is suggested by the comparative rarity of primary abdominal tuberculosis and the infrequency of calcified abdominal glands radiologically. The likely mode of infection is then by inhalation, though whether the portal of entry is nasopharyngeal or pulmonary remains open to question.

Examination of the tonsils for tuberculous foci has not yet been carried out in Southern Nigeria. From a pulmonary primary focus bacilli could pass via the hilar and broncho-mediastinal glands to the cervical glands and even further afield to the axillary nodes. It would be necessary to assume, however, in those rarer cases in which the inguinal glands are primarily involved, that infection had been, exceptionally, by ingestion and not by inhalation, and the route of infection via the ileo-caecal, para-aortic, and iliac nodes. Such an explanation would yet fail to account for those instances in which the inguinal glands are involved in association with the axillary and/or cervical glands.

The final possible method of spread of infection from the primary complex to the peripheral lymph nodes is by the blood stream, a route too little considered in the past, paralleled in such diseases as syphilis, and consistent with the early bacteraemia that has been shown to occur in tuberculous infection. Though proof is lacking, this last route seems to be the most convincing possibility. Once deposited in the glands, the bacilli may be demolished, may be permanently latent if the degree of glandular sensitization never attains the threshold requisite for the occurrence of manifest disease, or, if this threshold is exceeded, may lie latent only until and if some precipitating factor provokes overt tuberculous lymphadenitis.

The precipitating factor is probably not a further tuberculous infection. In this series a history of a

recent tuberculous contact was notably rare, but in no fewer than nine cases there was a clear and unmistakable precipitation of the disease by lactation, a troublesome erupting tooth, or a pyogenic dental or alveolar infection. Admittedly there remain 42 cases in which no such factor is evident. It is probable that in very young children with a high degree of allergy the provocative agent may be so trivial as to be easily overlooked—normal dentition, perhaps. Further, in some cases the precipitating factor might conceivably be general rather than local—for instance, an attack of malaria. Though no such case occurred in this series, I have observed on several occasions the association of a deficiency syndrome (probably of protein and the vitamin-B complex), characterized by weakness, skin changes, severe anaemia, and oedema, with tuberculous lymphadenopathy.

The cervical glands, which are those most commonly affected by tuberculosis, are also those most prone to intercurrent non-tuberculous infection from ears, pharynx, tonsils, and teeth; while for the axillary glands lactation, and for the inguinal chiggers, tropical ulcer, or venereal disease, may pull the trigger. Once one group of glands has been thus excited to overt tuberculous disease other adjacent groups may be affected by lymphatic channels and in lymphatic continuity.

Summary

A survey of 51 cases of tuberculous lymphadenitis in the Nigerian African is made. It is pointed out that there is a tendency to rather more florid manifestations than in the European, that in a high proportion of cases more than one gland group is involved, and that the axillary glands are quite often, and the inguinal glands not rarely, those primarily affected. Certain suggestions are made regarding the pathogenesis of the disease.

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At this season of the year, when Continental travel is likely to be popular, there are certain insurance aspects which should be carefully considered. It is possible, the insurance company having been informed beforehand about the precise period of the Continental visit, for the normal motor policy cover to be extended for use on the Continent. Some companies will include under this heading the Marine Transit risk, but inquiry should be made specifically upon this point. Certain countries on the Continent, such as Norway, Sweden, Denmark, and Switzerland, require specific information to appear on a certificate of insurance. In the event of a visit to these countries the insurance company will require details of the engine and chassis numbers of the car and a note stating inclusive dates of the proposed visit. It should be noted that the cover granted by the comprehensive motor insurance policy for personal effects is somewhat limited, and, while the detail varies a little as between companies, as a rule it extends only to a total of £20. Experience has shown that for Continental travel this amount is inadequate, and those who intend to have a holiday abroad are strongly recommended to take out a separate insurance to the full value of the effects which they propose to take with them. A specially attractive policy of this type can be obtained through the Medical Insurance Agency, B.M.A. House, Tavistock Square, London, W.C.1, or 6, Drumsheugh Gardens, Edinburgh.