surgical treatment. Most of them were not true recurrences, but dated from the time of one's apprenticeship to surgery, when dissections were not so thoroughly performed. Excision of the gland-bearing fascia with a sharp scalpel is preferable to blunt dissection of individual glands with a Mayo's scissors. One case reported with several large glands in the anterior triangle after two previous dissections by a competent surgeon. On removing the glands for a third time a small abscess was found deep to the digastric muscle, and extending towards the pharyngeal wall. Any focus of infection may act as a stimulus to recurrence, and small particles of lymphoid material may grow and ultimately function as glands. It has also been said that lymphadenoid tissue, metamorphosed into fat, may resume its original lymphadenoid structure.

Condition of Scars following Dissection (see Table IV).—In 84 per cent. fine linear scars were present, with no suspicion of redness or surface prominence; of these, 40 to 50 per cent. were practically invisible unless the neck was closely inspected. A few broad scars are to be expected in cases reporting with abscesses or sinuses when the subcutaneous tissue had largely sloughed away. No case of

TABLE IV.—Condition of Scars following Dissection.

	Cases.		Scars.		
	Dissected.	Traced.	Fine linear.	Slightly prominent.	Broad or adherent.
Simple enlargement	2	1	1	—	—
Caseated glands	121	120	107	12	1
Caseated glands with abscess ...	46	44	33	7	4
Caseated glands with sinus ...	18	18	13	3	2
Total	187	183	154	22	7
Percentage			84.2	12.0	3.8

keloid was seen. The pathology of this condition is still wrapped in mystery. The following are in my opinion contributory factors: an active untreated primary focus, a "bevelled" incision, inaccurate closure of the skin, the use of catgut skin sutures, and any swelling leading to stretching of the scar. The skin incision should be closed by a subcuticular stitch, which coopts the edges so accurately that they immediately adhere. No raw area should remain to ooze or heal by a process of superficial granulation.

Results of Curettage.

Of 111 tuberculous glands complicated by abscess, 32 were dissected,* the remainder were scraped, with the following results:

No glands remaining	38
Small glands, non-pathological	13
Required dissection later	14
Pathological glands still present	7
Untraced	5
Died later	2

79

Two infants, suffering from tuberculous mastoiditis with secondary glands and abscesses, succumbed to tuberculous meningitis a few months after operation. The spread to the meninges would appear to have taken place directly from the petrous bone. In neither case was any radical operation performed on the ear or mastoid cells.

I find that 50 per cent. of tuberculous glands complicated by abscess ultimately require dissection, that 34 per cent. recover completely after curettage, and that the remainder have small palpable glands which do not appear pathological. Cases of chronic abscess arising from a single caseous gland have a reasonable prospect of cure, as the smaller associated glands subside if safeguarded from further bouts of infection by removal of tonsils, etc. One naturally wonders if a follow-up period of two to six years is not rather brief, but end-results in tuberculous

*I now dissect a much larger proportion.

adenitis are akin to malignant disease—there is no time limit to recurrence. It is by no means easy to be dogmatic about small glands remaining after curettage, as I find the jugulo-digastric glands palpable as small ovoid bodies about the size of a haricot bean in 85 per cent. of healthy children, and smaller glands along the posterior border of the sterno-mastoid are not uncommon. Dowd,¹⁷ commenting on similar nodules, remarks: "I have watched nodes of this kind year after year, and have hardly ever seen them increase in size and have frequently seen them subside, a few have been removed and almost without exception have proved to be hyperplastic."

I maintain that minute glands which are perfectly soft and not larger than a bean can be safely left to Nature; other observers might deem them pathological—then they present the easiest of dissections if one is obsessed with the idea of removing the last shred of palpable lymphatic tissue from the neck.

CONCLUSIONS.

1. As seen in a surgical out-patient department 10 per cent. of glands are likely to recover with treatment of a peripheral focus of infection. Such glands are probably not tuberculous.

2. Necrosis and caseation take place rapidly in tuberculous glands.

3. The signs of caseation are increased hardness and loss of elasticity, not "softening" as is generally thought. Softening or fluctuation indicates an extracapsular abscess.

4. Palliative measures may allow the subsidence of peradenitis, but have no influence on the intracapsular substance of the gland.

5. The fact that 51.9 per cent. of tuberculous glands are complicated by an abscess or sinus suggests that conservative treatment is usually unduly prolonged.

6. Tuberculous glands should be removed by dissection whenever signs of caseation become manifest; the presence of an abscess is no contraindication.

7. Curettage gives satisfactory results in selected cases.

I have to acknowledge my indebtedness to Dr. E. A. Johnston and Dr. T. O. Morrison for their help in arranging the "follow-up" of patients, and to Miss Kathleen I. Stewart for her assiduous care and skill in the post-operative treatment of my cases.

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SOME ASPECTS OF THE TREATMENT OF RHEUMATOID ARTHRITIS.

BY

A. H. DOUTHWAITE, M.D., F.R.C.P.,
ASSISTANT PHYSICIAN TO GUY'S HOSPITAL.

In briefly outlining the most important forms of treatment of rheumatoid arthritis, I would draw attention particularly to the benefit ensuing from consideration of the mechanical aspects of the affliction. Drug and vaccine therapy are scarcely considered, for both are strongly represented in current literature, and neither has proved of much efficacy.

So long as it is held that the presence of focal sepsis is the chief or only etiological factor, so surely shall we make no progress in the treatment of the disease. Prior to the advent of the wave of enthusiasm for bacteriology, clinicians directed their attention to the constitutional abnormalities of the individual as a whole. Resulting therefrom came the masterly accounts of the disease, such as that of Kent Spender,¹ unsurpassed in accuracy of clinical observation by modern writings. When the medical mind focused on the dangers of dental and tonsillar sepsis, the concurrent

diathetic and acquired widespread deviations from the normal were overlooked. The result is that the outlook for the rheumatoid patient is little, if any, better to-day than it was fifty years ago. Too many of our patients have been rendered edentulous only to suffer the miseries of disturbed digestion and steadily stiffening joints. Such failures may be explained by postulating the presence of microbes in the interstices of the jaw, and operation advised to remove doubtfully infected bone. Pulmonary abscess is then a common sequel.

If, however, we pause to review the aggregation of cases loosely termed "chronic rheumatism," we find that as a rule they may be separated into three clinical types.

1. Rheumatoid or atrophic arthritis, a disease occurring largely in females of reproductive age and characterized by little or no pyrexia, low blood pressure, and unstable pulse rate,² scattered pigmentation of the skin,¹ on a basic waxy pallor, generalized wasting in addition to pronounced atrophy of the muscles about the affected joints, visceroprosis, hypochlorhydria, exaggerated tendon reflexes, and symmetrical swellings of smaller joints, particularly those of the fingers. The skin over the affected articulations is pale and atrophic, and local tenderness to pressure is never a striking feature. With the exception of increased translucency, bony change is absent for months or years.

2. Infective arthritis (excluding pneumococcic, gonococcic, etc.) occurs with equal frequency in either sex. It is usually associated with frankly demonstrable sepsis in the mouth or maxillary antra. Pyrexia is the rule, and the affection is asymmetrical, involving larger joints—for example, wrist, ankle, and knee—than those attacked in the atrophic type. There is local redness and tenderness of considerable degree, but none of the general constitutional abnormalities noted in the first class. The condition clears up spontaneously, or is greatly ameliorated, on elimination of the infected foci.

3. Osteo-arthritis, or hypertrophic arthritis, occurs usually after the age of 40, and attacks otherwise robust and commonly obese individuals who exhibit good muscular and visceral tone. The acid content of the gastric juice is a high normal. The joints commonly affected are those of the knee, hip, and fingers, but there is early enlargement of the bones with osteophytic outgrowths, and obvious lippling of the articular margins is demonstrable by x rays. There is no constitutional disturbance, and the disease progresses slowly and often painlessly for many months.

Predisposing Factors.

Inquiry into the previous history of patients with rheumatoid arthritis reveals a series of deviations from the normal, such as is not found in the other types. Thus the subjects have always been of spare build, intellectually efficient, but lagging behind their fellows in physical prowess. They have suffered from the cold, and chilblains on blue, clammy extremities have recurred with monotonous regularity winter after winter. Llewellyn³ has drawn attention to the frequency of mucous colitis, urticaria, blanching of the fingers, and erratic sweats which characterize childhood and adolescence. It is difficult to determine the point at which rheumatoid arthritis actually develops. Loss of weight and vigour often precede the onset of joint swellings by many months, and when articular involvement is finally apparent it is usually at first transient in nature, a feature of differentiation from the proved infective forms.

Metabolic Errors.

Metabolic changes have been demonstrated in rheumatoid arthritis. The chief of these is deficiency in the oxidative processes occasioned, it is believed, by the existence of large areas of vaso-constriction and capillary stasis. Resulting therefrom are decreased sugar tolerance and relative increase of neutral or imperfectly oxidized sulphur in the urine.⁴ It is stated⁵ that these abnormalities can be corrected by the use of vaso-dilators. If this be the case, it supports the theory that the fundamental disturbance of the disease is that of sympathetic instability. It has been postulated that the basis of the sympathetic instability lies in a disturbance of the endocrine system, particularly in the direction of hypothyroidism. The arguments are

suggestive, but not yet convincing, for many of the symptoms of rheumatoid arthritis are rather those of hyperthyroidism, and I have rarely found a basal metabolic rate of abnormally low level.

Space does not permit of a full discussion of this interesting problem, but enough has been written to emphasize the fundamental truth that rheumatoid arthritis is a disease developing on a grossly abnormal soil, and that inattention to this fact must militate against the production of effective cure.

TREATMENT.

Diet.—In the acute stage a bulky diet poor in nutritive value should be prescribed. Such consists largely of fresh fruit and green vegetables. After two weeks, fish, chicken, and red meat may be added, but starchy and saccharine foods should form a small proportion of the total in view of the noted inability to deal adequately with glucose.

Drugs.—Medicinal treatment is of small value. Apart from symptomatic treatment for the relief of pain, preparations of iodine and thyroid gland are chiefly favoured. The effect of the latter in stimulating the sluggish metabolic processes explains any improvement which may follow its use.

Elimination of Sepsis.—The utmost caution should be exercised before advising the removal of teeth or tonsils suspected of infection. In a disease presenting abnormalities of skin, gastro-intestinal, muscular, and vascular systems, it is scarcely to be expected that healthy teeth would be found in an otherwise diseased individual. Recession of the gums, the formation of pockets, and x-ray appearances of early infection are the result, not the cause, of rheumatoid arthritis, and to advise wholesale extractions is as illogical as to counsel removal of the colon on account of sluggish peristalsis. Both conditions subside *pari passu* with recovery from the general disease. On the other hand, frank sepsis should be eliminated, for its presence will lower the bodily resistance, and the absorbed toxins may act indirectly, through damage of the endocrine system, in producing arthritis. It is of peculiar interest to note that Pemberton⁵ found infected foci in 70 per cent. of his 1,100 cases of chronic arthritis, but the number of recoveries was three times as great in those in which sepsis was allowed to remain as in cases from which it was eliminated.

Application of Heat.—Probably the relief derived from thermal treatment by radiant heat baths, diathermy, dry air baths, and hot wax applications is largely referable to the improvement which they produce in the peripheral circulation. I have achieved the best results by the use of a cabinet heated by electric light bulbs and into which air, previously dried by passage through chemicals, and impregnated with a volatile rubefacient, is pumped. The patient is given one-tenth of a grain of pilocarpine hypodermically before entering the cabinet. Profuse sweating occurs, but, owing to the dryness of the air, the perspiration evaporates rapidly, and the patient emerges refreshed rather than in the state of sodden exhaustion produced by many other forms of heat. General massage is carried out immediately after each treatment. Within a few weeks there is a noticeable improvement in the condition of the skin and joints, and the patient is relieved from the wearying pains and insomnia which have caused so much distress in the past. The method of application of hot paraffin wax has gained prominence of recent years, and bids fair to supersede many of the older forms of thermal treatment. Owing to the non-conducting nature of this substance, it can be applied at temperatures of 120° to 170° F. to the entire body without producing a burn. Additional safety is ensured by the fact that a cushioning effect is produced by the inclusion of a thin layer of air between the wax and skin. Heat loss is very slow, thus a constant high temperature can be maintained for half an hour or more before the solidified casing is removed and the abundant sweat wiped off.

Use of Splints.—Mechanical appliances for the control of joint movements are required (a) in the acute stage of the disease in order to prevent contractures and to allay pain; (b) in the late stages when the patient suffers from the crippling effects of periarticular and intra-articular

adhesions. In the former case light splints should be applied to hold the shoulders abducted, elbows semiflexed, forearms incompletely supinated, wrists dorsiflexed, fingers extended with radial deviation, thumb slightly flexed and adducted. As regards the lower extremity, if the hip-joints are affected the patient should lie flat. Great care must be exercised to avoid hyperextension at the knee-joints; the foot should be held at right angles to the leg. Once the limbs are immobilized, muscular spasm subsides and relief from pain invariably follows. After a week it is usually advisable to remove the supports daily and to apply gentle massage and cautious passive movements in order to avoid stiffness. With this one must be content until the acute symptoms have subsided, when treatment by dry air baths, massage, and active movements may be instituted.

In the late stages of the disease little or no activity is present, and we are confronted with the mechanical disabilities resulting from the ravages of an affection now almost extinct. If the joints have been allowed to become fixed by fibrous tissue their mobility must be restored by graduated manipulation. In the case of the lower limbs, however, this process is useless unless the weight of the body be subsequently transmitted through callipers from pelvis to ground. Various appliances have been devised for this purpose, and may incorporate an adjustable extension for the knee-joint. By their use the patient is enabled to walk with little or no pain, and the previously atrophied muscles rapidly regain their lost bulk and tone.

Manipulation.—This is an essential adjunct to the mechanical treatment in all save the acute stage. It must be borne in mind that pain and swelling in a joint are not necessarily signs of active disease, but commonly result from the irritating action of adhesions. It is, in fact, remarkable how soon symptoms subside after the affected joints are moved with rupture of these bands. Patients apparently hopelessly bedridden are restored to relatively painless activity by a procedure which is still regarded by many as fraught with danger. Actually, instead of lighting up the disease by forced movements, the very reverse takes place, provided, of course, that the manipulation is carried out by those versed in its technique and aware of its dangers.

The ground gained by these procedures must not be lost by inattention to the details of after-treatment. It is essential that the increased range of movement be preserved, and this is best attained by encouraging active movements, which, in certain joints, may be aided by taking advantage of the inertia of a weight tied to the distal end of the limb. All these exercises must be watched and controlled by a masseuse, on whom the onus of producing a cure rests almost as heavily as on the physician.

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RAPIDITY OF HEALING OF A GASTRIC ULCER.

BY

RALPH MORTON, M.B., F.R.C.S.Ed.,
HONORARY SURGEON, LOUTH HOSPITAL, Lincs.

(With Special Plate.)

THE following case is worthy of publication in the light of the recent discussion with regard to the rapidity of healing of a gastric ulcer under intensive alkali treatment.

A shop assistant, aged 24, was admitted to Louth Hospital on November 23rd, 1928. His story was the typical one of pain after food, on and off, for over a year. He had recently become progressively worse, and at the time of admission stated that he had not been free from pain during the preceding ten days. He was emaciated, weighing only 7 st.—his usual weight being about 9½ st. He was tender on palpation in the epigastric region, and presented the general appearance of having suffered a good deal.

The radiograph taken the day after admission (Fig. 1) shows a large ulcer on the lesser curvature of the stomach. He was put on a rigorous diet (Sippy¹), combined with intensive alkali treatment as described by Professor MacLean.² Under treatment he improved rapidly. In about three days he was free from pain, but tenderness persisted for about three weeks.

A second plate was taken a little over a month later, and this (Fig. 2) shows that the crater is rapidly filling up.

A third plate, taken one month later, shows that the lesser curvature of the stomach has almost regained its normal contour.

The patient now enjoys absolute freedom from pain, can take normal diet, and his weight has increased to 9 st. 7 lb.

Here we have a large ulcer which has rapidly been brought into a quiescent state; I shall not at such an early date say healed. It illustrates the fact that large ulcers can be rapidly brought into a healing condition under intensive alkali therapy; but in my opinion such ulcers are not of a deep or penetrating variety. I agree with Barclay³ that it is impossible to tell from a radiograph whether an ulcer is of a penetrating variety or not; much of the appearance of penetration is due to heaping of the gastric mucosa combined with surrounding inflammatory exudate. The extent of the disease can only be judged in such cases by correlating the radiographic appearances with the actual clinical symptoms and signs.

I take it that the cases described by Professor MacLean which rapidly responded to intensive alkali treatment were of this nature. At the same time I agree with Lord Moynihan⁴ that real penetrating ulcers would not thus rapidly disappear in a month or so.

Intensive alkali treatment combined with dieting and rest certainly does give relief in cases of early or shallow ulceration, but in the case of large penetrating ulcers surgical intervention is still the only hope of cure.

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COEXISTENCE OF LYMPHADENOMA AND TUBERCULOSIS.

BY

T. KRISHNA MENON, M.B., C.M.,
HONORARY PHYSICIAN, GENERAL HOSPITAL, MADRAS;

AND

T. BHASKAR MENON, M.B., M.R.C.P.
(Department of Pathology, Medical College, Madras.)

(With Special Plate.)

THE possibility of lymphadenoma and tuberculosis coexisting is well recognized. Ewing has pointed out that tuberculosis follows in the wake of lymphadenoma; and Ziegler estimated that 20 per cent. of these patients died of miliary tuberculosis. It has, indeed, been held that the two diseases are identical. Sternberg first put forward the view that Hodgkin's disease was a form of tuberculosis, due, probably, to infection with an attenuated form of the tubercle bacillus. Clinically, cases occur in which the two diseases are almost indistinguishable. In the morbid histology of tuberculous adenitis a type is recognized without definite giant cell systems and in which endothelial hyperplasia is the characteristic feature. It is well known that an endothelial hyperplasia may be the sole feature of early lymphadenoma, a point which is emphasized by Christian and Warthin. Even Andrewes, though he denies the identity of the two diseases, considers it is difficult to distinguish atypical lymphadenoma from a typical tuberculosis.

We do not intend to lay any great stress on this view, but the occurrence of tuberculosis in cases of Hodgkin's disease is of great interest, since both may present lesions which are difficult to allocate. This is particularly so since there occur in lymphadenomatous glands in the late stages certain yellowish-white areas which are referred to by Ewing as "necrotic foci" and by Longcope as "areas of necrosis." The difficulty arises in distinguishing them from areas of caseation, and the question may be asked