

1. Cleanse the nose with salt solution or with 0.25 per cent. aqueous chloramine-T solution, either by spraying several times, using the handkerchief between applications, or by irrigation. The same chloramine-T solution should also be used as thoroughly as possible as a gargle.

2. After this preliminary cleansing, and when the augmentation of nasal secretion has subsided, apply the oil solution of dichloramine-T with an oil atomizer, endeavouring to reach all parts with an abundant supply of the oil. It is not certain that the oil introduced in this way continues active for more than two hours. For intensive treatment it should be renewed at the end of that time. In any case, it would seem important to repeat spraying with the oil at such intervals as to make at least four oil treatments daily at about equal intervals of time.

The first few applications of the oil sometimes occasion sneezing, but the nose appears to acquire a tolerance of the treatment, and subsequent applications cause no inconvenience.

As with all antiseptics, there are three factors governing success which must be constantly borne in mind: (1) There must be good contact with the parts to be acted upon; (2) there must be an adequate concentration of the antiseptic; (3) this must be maintained an adequate length of time. When the concentration is of necessity restricted, the time of action must be correspondingly prolonged. It is to attain this last desideratum that the treatment with an oil solution is recommended, but even so the actual amount of antiseptic applied to the nasal mucosa is not very considerable, although larger in quantity and in a more persistent form than could be tolerated in aqueous solution.

METHOD OF PREPARATION.

The preparation of the substances employed in these experiments is as follows:

Dichloramine-T, $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NCl}_2$. This substance was first prepared by Chattaway,³ and the following details are based on the method employed by him.

Bleaching powder (350 to 400 grams) of good quality is shaken with two litres of water on a shaker for an hour, and then the mixture allowed to settle. The supernatant fluid is siphoned off and the remainder filtered. Powdered toluene-para-sulphonamide, 75 grams, is then added to the whole of the hypochlorite solution and shaken till dissolved. The solution is filtered if necessary, placed in a large separating funnel, and acidified with acetic acid (100 c.cm.) added in portions. About 100 c.cm. of chloroform is then added to extract the dichloramine, and the whole well shaken. The chloroform layer is tapped off, dried over calcium chloride, filtered, and allowed to evaporate in the air. The residue is powdered and dried *in vacuo*. It is sufficiently pure for most purposes without recrystallization, and it is not necessary to use a pure toluene-para-sulphonamide in its preparation, as objectionable impurities likely to be present are removed in the preparation of the dichloramine.

An alternate method of preparation is as follows:—Toluene-para-sulphonamide (50 grams), water (500 c.cm.), crystallized sodium acetate (100 grams), and chloroform (100 c.cm.) are placed in a flask, which is immersed in cold water, and the contents treated with chlorine gas to saturation. If necessary, more chloroform is added to dissolve the dichloramine completely. The chloroform is separated in a funnel, washed with a little water, dried over calcium chloride, filtered, and allowed to evaporate. The crystalline residue of pure toluene-para-sulphon-dichloramine is powdered and dried *in vacuo*. The yield is practically the theoretical.

Preparation of Chlorinated Eucalyptol for Use as Solvent.

Eucalyptol (*British Pharmacopoeia* or *United States Pharmacopoeia*), and not eucalyptus oil, must be used. Five hundred c.cm. is treated with 15 grams of potassium chlorate and 50 c.cm. concentrated hydrochloric acid for twelve hours or longer; it is then well washed with water and with sodium carbonate solution. After this the water is tapped off and 15 grams of dry sodium carbonate is added to the oil and the whole allowed to stand for twenty-four hours. It is then filtered, dried with a little solid calcium chloride, and is then ready for use.

Preparation of Chlorinated Paraffin Oil for Use as a Diluent.

To 500 c.cm. of commercial liquid paraffin oil 15 grams of potassium chlorate and 50 c.cm. of concentrated hydrochloric acid are added and the mixture exposed to light, preferably sunlight, for several hours. It is then transferred to a separating funnel and washed successively with water, a solution of sodium carbonate, and again with water. The opalescent oil is then tapped off, solid calcium chloride added in small quantity, and about 5 grams of animal charcoal. On subsequently filtering through paper a clear, slightly yellowish oil is obtained, which is ready for use.

Preparation of the Oil Solution of Dichloramine-T.

Dissolve 0.2 gram of the dichloramine-T in 2 c.cm. of the chlorinated eucalyptol without heating. When solution is complete, add 8 c.cm. of the chlorinated paraffin oil. Mix well, and the solution is ready for use. This solution contains 2 per cent. of the dichloramine-T. It is relatively unstable, and should be discarded as inefficient as soon as a distinct precipitate makes its appearance (toluene-para-sulphonamide). An opalescence or moderate cloudiness is not evidence of material deterioration. It is a safe rule not to use the completed oil mixture more than three or four days after its preparation. Strong light and heat undoubtedly hasten the rate of deterioration.

An alternate method, when considerable quantities are required, is to prepare a stock solution, 10 per cent. of the dichloramine-T in chlorinated eucalyptol, and to dilute this with chlorinated paraffin oil, 1:4, as needed for immediate use. The eucalyptol solution should be kept in a cool, dark place, and under these conditions will suffer little deterioration within a month.

REFERENCES.

- 1 Lieutenant-Colonel M. H. Gordon: Disinfection of the Nasopharynx of Meningococcus Carriers, *BRITISH MEDICAL JOURNAL*, July 1st, 1916. Also a later article by the same author and Captain Martin Flack, published in the same *JOURNAL*.
- 2 H. D. Dakin, J. B. Cohen, and J. Kenyon: On Chloramine, its Preparation, Properties, and Use, *BRITISH MEDICAL JOURNAL*, January 29th, 1916.
- 3 *Trans. Chem. Soc.*, 1905, vol. lxxxvii, p. 145.

CLINICAL NOTES ON A CASE OF FIBROID DISEASE OF BURSAE.

BY

CAPTAIN MANFRED MORRIS, R.A.M.C.(T.F.).

FIBROID HYPERPLASIA occurring in bursae and false bursae is of interest rather from the point of view of etiology than of treatment. My attention was lately drawn to this condition by a case of widespread fibrosis occurring in many bursal sites.

In January last there was admitted to the Surgical Division of No. — General Hospital a patient, aged 53, an engine-room artificer in the Royal Navy. He complained of piles and inability to sit down owing to the pain caused by tumours in his buttocks. On examination the patient had four external hæmorrhoids and large solid masses over the tuberosities of both ischia. These masses were as large as fetal heads, the right one being somewhat larger than the left. The tumours were irregular in outline, adherent to skin, and felt fixed to deeper structures.

On palpation they gave a non-fluctuant, hard, almost cartilaginous sensation to the hand. The skin over these masses was red, tender, and beginning to be inflamed. Further examination of this patient showed smaller tumours of similar consistency and physical signs occupying situations over the olecrana, the tubercles of both tibiae, the third piece of the sacrum, and one small mass as large as a walnut on the ulnar aspect of the base of the left thumb. The patient complained chiefly about his piles, and at a preliminary operation I ligated these. Convalescence was normal, the patient being encouraged to lie in the prone posture as much as possible to give the skin over the buttocks a chance to recover. Fourteen days later I decided to operate on the masses in the buttocks. The disability caused by these was purely mechanical. X-ray examination showed no bony changes in the pelvis and hip-joints. The tumours were represented by dim shadows mapping out their outline, which appeared to be continuous with the tuberosities of the ischia. The patient was placed in the prone position, with sandbags across the sterno-clavicular articulation and pelvis, so as not to embarrass respiration, and given chloroform. Curved incisions were made over the masses, which were found to be extremely dense and adherent. Their capsule was very vascular, and adherent to surrounding tissues. It was soon obvious that it was impossible to shell out these tumours, so they were removed by morcellation, triangular wedges being cut out till the masses

were removed. The tumours extended down to, and, as far as one could judge, were continuous with the periosteum over the tuberosities of the ischia along their whole length. The ensuing large cavities were flushed out with hot saline and obliterated with buried catgut sutures, the wounds being closed with interrupted silkworm gut. The smaller tumour over the sacrum was enucleated without any difficulty. The patient made an uninterrupted recovery, and was discharged to a convalescent home. He states that he lately sat down at a concert on a hard form for one and a half hours—a thing he has been unable to do for thirty years.

To the naked eye the masses appeared fibrous and avascular throughout. There was no obvious lamination or cavity in the tumours, which appeared to derive their blood supply from their capsules. It appeared remarkable that masses of such size and such a poor blood supply could survive without undergoing some obvious degenerative changes. Captain Campbell kindly examined these specimens for me, and reported that the tumours were typical fibromata. There has thus to be considered a case of widespread fibrous changes occurring in bursae in normal positions and a fibroma occupying a situation not as a rule where one finds a normal bursa—I refer to the tumour of the left thumb.

The commonest changes in bursae set up by chronic irritation causing inflammation are seen in the bursitis of the occupation diseases known as housemaid's knee, miner's elbow, and weaver's bottom. These conditions are respectively an inflammation of the bursae in the prepatellar, olecranon, and ischial tuberosity situations. The condition starts as a hydrops. The bursae, irritated by prolonged pressure, secrete an excess of synovial fluid, Nature's method of forming a more efficient water cushion. Secondary infection, haemorrhage, deposition of fibrin substance, and thickening of the wall of the bursa may ensue.

The tumours in this case are unlike this condition. The youngest tumour is the small one in the thumb and the one removed from the sacrum; neither of these appears to have started as a hydrops or a haemorrhage. It is therefore unlikely that the larger ones started as either of these two conditions, afterwards undergoing solidification. The patient's occupation is not one that, so far as can be seen, is likely to give rise to bursitis. He has been at sea working in engine-rooms for thirty years, and apart from some cramping, does not do very sedentary work or work that throws prolonged strain on the situations involved. It appears, therefore, that the theory that the patient's occupation caused this condition can be dismissed.

The question now arises if this condition may be due to tubercle, syphilis, or gonorrhoea. Tubercle can be immediately dismissed. It is impossible to imagine chronic masses of this size without the presence of caseation or giant cell formation. In discussing the probable venereal origin of this condition we must go back to 1887. In August of that year the patient developed a "running" which ceased after three weeks. He denies chancre, sore throats, rash, or other syphilitic manifestations. Almost immediately after cessation of this urethritis he was admitted to hospital in Bombay with what he describes as rheumatic fever, and states that he was in hospital till January, 1888. He has suffered from rheumatic pains since, but has never been in hospital again with them. Twelve months after the illness he noticed that lumps were beginning to grow over the buttocks and elbows. At first as large as peas, they gradually and insidiously grew, till at the end of thirty years they have reached their present size. His only previous illness was typhoid fever in 1893, in Constantinople. The tumours have caused no pain or trouble, apart from those of the buttocks, which have prevented the patient from sitting down. Captain Mackey reports that the patient has a strongly positive Wassermann reaction. Must we look upon the fibroid changes in these bursae as being of a syphilitic or gonorrhoeal origin?

In thirty years the only syphilitic changes are these large deposits of fibrous tissue, without, as far as can be found, there having been any other syphilitic or gummatous manifestations taking place. Gonorrhoea certainly produces inflammation of synovial membrane, and therefore could produce a bursitis. I think it unlikely that it could produce the condition we are considering.

Taking into consideration the histology of these masses—the fact that one of them has probably occurred in tissue other than synovial membrane—it seems probable, as Erichsen points out, that we have to consider a case in which the tissues have developed a tendency to undergo fibrous hyperplasia, the changes taking place chiefly in the synovial walls of bursae. Admitting the syphilitic taint

and the gonorrhoeal history, the rheumatic pains similar to the pain felt in nodes, I look upon these masses as primary non-malignant growths of fibrous tissue.

BRONCHOSCOPY IN THE TREATMENT OF ASTHMA.

By W. S. SYME, M.D., F.R.S.E.,

SURGEON, EAR, NOSE, AND THROAT HOSPITAL, GLASGOW; EXTRA-ACADEMICAL LECTURER ON DISEASES OF THE THROAT AND NOSE, GLASGOW.

AMONG the patients who come under the care of those engaged in the special branch of rhinology and laryngology there are always a certain number who complain of asthmatic attacks of a more or less definite character. In most of these patients the asthma is not severe, and is rather of the nature of difficulty of breathing caused by nasal obstruction, or at any rate of an interference by this obstruction with the co-ordinated movements of which regular respiration is composed. There are others in which asthma, and sometimes severe asthma, is associated with a nasal affection of which obstruction is not a prominent feature. In accessory sinus disease, and especially in maxillary antral disease, asthma is not infrequently complained of. The cure of the sinus disease is, as a rule, followed by disappearance of, or at any rate by marked alleviation of, the asthmatic attacks. The relation of the sinus disease to the asthma is probably complex, and depends on the intermittent obstruction which the discharge from the sinus causes, the irritation of the discharge on the upper air passages, and possibly the action of the products of suppuration on the higher nerve centres.

In speaking of asthma one of course recognizes that it is not a disease but a symptom, and that for its proper study an inquiry into practically all the organs of the body would be necessary. Even in what is known as pure spasmodic asthma the problem is not simple. The respiratory apparatus is not alone at fault. There is also a susceptible condition of the central nervous system which in the present state of our knowledge cannot be more definitely described. It is evident, therefore, that in the proper treatment of asthma there is room for the co-operation of the specialist and the physician. Treatment applied to the air passages alone has, then, limitations and is empirical.

Not every case of asthma associated with a nasal or sinus affection is cured or even appreciably benefited by the effective treatment of the nasal or sinus condition. Moreover, in many cases there is no nasal abnormality, if one may say so, though it has been cynically said, "It's a poor nose a nasal surgeon can't find something wrong with." The nasal treatment of asthma, or in other words the treatment by cauterization of the nasal septum, has in my experience given only temporary benefit.

During the past two years I have treated eight cases of asthma by the direct application of silver nitrate solution to the lining of the bronchi with the aid of the bronchoscope. The ages of the patients ranged from 10 to 53. Except in the youngest, in whom chloroform was used, the treatment was conducted under cocaine anaesthesia with a preliminary hypodermic injection of omnopon or morphine and atropine. The position of the patient was that which I prefer for bronchoscopy—lying on the left side with the head thrown back. The bronchoscope is introduced, and a mixture of cocaine and adrenalin is applied to the mucous membrane in advance of the tube as far as the openings of the secondary bronchi. The entrance to the secondary bronchi and the main bronchi are then swabbed with a 10 per cent. solution of silver nitrate. I have been specially careful to apply the solution to the regions of the bifurcations, because it seemed to me that the mucous membrane at these places was hyperaemic, and, at any rate, one would expect the air current to impinge most strongly at these points, and the reflex to be most active there. The idea underlying the treatment is that in asthma one factor in the causation is an exaggeration of a normal reflex. When an irritative substance, such as an irritating gas, touches the lining of the bronchi and larger branches, the smaller bronchi and bronchioles are by reflex action contracted for protective purposes. In attempting to weaken this reflex in asthma by applications to the peripheral pole, it is not implied