THE TREATMENT OF CARBUNCLES.

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During the last few years the treatment of carbuncles has often been discussed, and many different procedures advocated, ranging from the local application of cod-liver oil or insulin to the injection of staphylococcal toxoid. Without denying the good effect of many of the forms of treatment recommended, it is important that the question be considered from a rational standpoint.

In the first place, it must be realized that a carbuncle is an infective gangrene of the subcutaneous fat, the organism concerned is nearly always the *Staphylococcus aureus*, and the infection almost always occurs *via* the blood stream. It is important to emphasize these elementary, and generally accepted pathological facts because a consideration of them has an important bearing on the treatment of the condition.

The occurrence of a carbuncle usually implies that the patient's resistance is low, and the possibility of diabetes or chronic nephritis being present at the same time must always be considered.

Classification of Carbuncle.

Carbuncles occurring on the face and carbuncles complicating diabetes stand in a class by themselves and are of such great importance that they will be considered subsequently in detail.

The remaining carbuncles, which form the majority of those seen, fall ultimately into one of the following three groups:—

- (1) Localized "Non-toxic."
- (2) Localized "Toxic."
- (3) Spreading.

This classification is arbitrary and when the patient first comes under observation it will be impossible to say to which group the case should be assigned. Conservative treatment must always be instituted in the first instance.

Conservative Measures.

General treatment consists in putting the patient to bed, administering large quantities of fluid by the mouth, and giving sedatives if the pain is great. Glucose and alcohol are both of value, and calomel followed by a saline purge may be required.

Local treatment has two objects in view—first to increase the local blood supply, and secondly to encourage a transudate from the blood across the infected tissues.

The simplest and one of the most effective methods of increasing the local blood supply is by "hot-spooning." This is carried out by placing a pad of cotton wool in the hollow of a big wooden spoon, and keeping the former in position by fastening a piece of lint around the spoon. The spoon is now dipped into a bowl of boiling water and then held close to the carbuncle. The procedure can usually be carried out by the patient, and can be maintained for about twenty minutes and repeated every two hours.

In the intervals between the "hot-spoonings" transudation should be encouraged by the use of one of the following substances:—

- (1) Hypertonic saline of 1 oz. to 1 pint (5%) applied in the form of a large warm moist pack composed of three layers of lint over which is laid oiled silk or jaconet.
- (2) Glycerine and magnesium sulphate paste, spread on lint.
- (3) Glycerine, pure or mixed with water.

These different forms of dressings all have their uses, for example, if the patient shows an inclination to sleep, a glycerine dressing will remain comfortable for several hours. When he wakes up, a warm moist dressing may be a pleasant change.

With this treatment a large number of carbuncles improve rapidly, pain becomes less, the surrounding inflammation disappears and a discharge of pus and necrotic material occurs through the sinuses on the surface of the carbuncle.

Cases of this type fall into the first group and require only conservative measures for their treatment. Sometimes the sinuses coalesce to form a large opening leading into a cavity; when this occurs the latter may be packed daily with half-strength eusol until clean, when a loose packing of a watery solution of 1-100 ac. carbol. will stimulate the growth of granulation tissue.

Many authorities maintain that every carbuncle should be treated on these lines, and it is quite true that resolution will ultimately occur in most cases.

If, on the day following the institution of treatment, it is found that the carbuncle has become well localized, but that constitutional symptoms and pain are as bad, or worse, than before, it is wise to regard the case as belonging to group 2. The appearance of glycosuria at this stage in a patient known not to have diabetes is a strong reason for coming to this decision.

Operative Measures.

Modified Excision. Provided that the procedure is correctly and carefully carried out, the proper treatment for group 2 cases is *modified excision*. Before excision is contemplated three criteria must be satisfied—the carbuncle must not be on the face; it must not be a complication of diabetes; and it must be well localized.

The excision should be carried out as follows:—Under gas and oxygen anæsthesia, the involved area is carefully cleaned with ether, and, if necessary, shaved. Sterile vaseline is liberally smeared on the skin surrounding the carbuncle. Excision is now performed, the aim being to remove the necrotic tissue just up to, but not encroaching on, healthy tissue. The mass of sloughing fat in the depths of the lesion is best removed by a combined use of a scalpel and a sharp spoon, the latter being used very cautiously. The occurrence of bleeding shows that the removal has been carried out to a sufficient extent.

To stay oozing the resulting cavity is now firmly packed with half-inch gauze plugging soaked in camphenol (a liquid prepared by grinding together equal volumes of crystals of phenol and camphor). It must be remembered that camphenol is a powerful corrosive. The whole area is now covered with a generous dry dressing. The dressing is left untouched for 36 hours. It will be found that the use of camphenol after careful excision will result in almost complete freedom from pain and a marked diminution in toxic symptoms.

When the packing is removed at the end of 36 hours the cavity is loosely packed with half strength eusol, and treatment continued as in the first group.

Group 3 cases are fortunately rare. Occasionally a patient is seen to whom thorough conservative treatment has been given, but the carbuncle shows no signs of localizing; on the contrary, the area of inflammation spreads rapidly and the patient's general condition deteriorates in an alarming way.

Injection of Whole Blood. This small, but important group of cases is best treated by the injection of the patient's whole blood around the carbuncle. This method, which was introduced some years ago, has fallen into disuse owing to difficulties associated with the procedure. If these difficulties are realized beforehand there is no trouble in overcoming them.

First, the injections are very painful and an anæsthetic must be given; secondly, the blood must be citrated or it will clot before the operation is concluded; finally, the sites of injection must be chosen carefully.

First obtain 25 cc. of a sterile solution of sodium citrate. Draw 3 cc. of the solution into a 20 cc. syringe. Place some spare needles in the remainder of the solution. Withdraw blood from the patient's vein so as to fill the prepared syringe. Clean the area of the carbuncle with ether. Points for injection are now selected about half an inch apart and one inch outside the indurated area. The blood is injected deeply towards the base of the carbuncle, 2—3 cc. being injected at each point.

Following this procedure conservative treatment is continued and it will then be found that in 12—24 hours improvement usually takes place, and the carbuncle can be considered under group 1 or 2.

Carbuncles in Diabetics.

The true diabetic who develops a carbuncle must be distinguished from the patient who shows a toxic glycosuria as the result of a carbuncle. In the case of the former the outlook is bad and a guarded prognosis must be given.

The patient must be put to bed immediately and the local conservative measures, already described, instituted. The attempt to control the diabetes itself is best entrusted to an expert in this subject; even if the patient is already having insulin, the dosage will probably require drastic revision.

Anti-staphylococcal serum should be given at once. Its effects are variable, but the occasional good result obtained warrants its use. If no improvement is taking place after a few hours a blood transfusion should be given. No active surgical intervention should be undertaken in these cases.

Facial Carbuncles.

Carbuncles of the face have a bad prognosis which is made incomparably worse by any form of incision or excision. The patient must be put to bed at once. A bandage on the face increases the general discomfort of the patient, and the most satisfactory local treatment consists in frequent "hot spoonings." In the interval between the "hot spoonings" a large pack, composed of three layers of lint soaked in warm hypertonic saline, should be laid on the carbuncle. Serum and blood transfusion have the same field of use as in the case of the diabetic.

Summary.

1. Recognition must be made of the fact that carbuncles differ in type and should be treated accordingly.
2. Most carbuncles resolve by the use of conservative measures.
3. Distinction must be made between the carbuncles causing glycosuria and the carbuncles complicating diabetes.
4. Carbuncles of the face and diabetic carbuncles have a bad prognosis. They must never be incised, excised, or have any local treatment other than the conservative measures advocated.

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