

FOCAL INFECTION*

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A LARGE percentage of the patients one sees in both hospital and consulting practice suffering from subacute or chronic disease give a history of earlier treatment for the removal of foci of infection. While it is true that many of them have been definitely helped, one is impressed by the fact that the removal of a focus or foci of infection has resulted only too often in little or no improvement in the health of the patient. Occasionally his disability has been increased, or new and more severe symptoms, the direct result of the operation, have developed, for example, lung abscess. One naturally asks oneself the question: Why should so many patients fail to respond more favourably to this rational form of therapy? It would appear that the chief reasons for lack of improvement in these patients are: (1) an inadequate appreciation of the causal relationship of focal infection to various chronic conditions; (2) an incomplete diagnosis, and, therefore, an incomplete plan of treatment for the individual patient; (3) a lack of proper cooperation in both diagnosis and treatment between the physician in charge of the patient and the medical or dental specialist who removes the foci; (4) an inadequate follow-up of patients under treatment. It is to these aspects of the question of focal infection that I wish to direct my remarks.

It is unnecessary to refer to the evidence upon which the principle of focal infection is based, if the frequency with which the removal of foci of infection is recommended by the profession may be taken as a proof of the recognition of its importance as a cause of disease. However, the manner in which foci of infection may affect the body locally or generally is not so generally appreciated.

By the term "focal infection" one means a chronic, usually low-grade, infection that develops insidiously and progresses slowly, producing symptoms of local and systemic disease. It is a common primary cause of

chronic ill-health, but more often acts as a contributing factor in disease conditions primarily due to other causes. The focus or foci causing the infection may be primary, or secondary and metastatic. More than one primary or metastatic focus may be present, and the infective or toxic activity of each may be constant, but is more often intermittent, in character. The common sites of primary foci are in the tonsils, gums and teeth, nasopharynx, paranasal sinuses, ear, and urogenital tract. Bacteria invade one or more of these areas and may or may not produce local symptoms, depending on the severity of the inflammatory reaction. If definite local symptoms develop, the patient may consult his physician or, in the case of the gums and teeth, go direct to his dentist. The diagnosis is comparatively easy and, providing the focus can be removed or drained satisfactorily, the local symptoms are relieved and, if treated early, the damage to distant parts of the body is repaired or prevented from developing. Unfortunately, local symptoms are often absent; the bacteria continue to multiply, producing toxins which are absorbed, causing systemic disease by intoxication; or the bacteria spread by direct extension to adjacent structures or reach the blood or lymph stream and localize in distant parts of the body, forming secondary or metastatic foci of infection, before the patient consults his physician. Metastatic foci may be found in any part of the body, but are most commonly present in the periarticular tissues of joints, in the endocardium, gall bladder and kidneys, less often in the mucous membranes of the lower respiratory and gastrointestinal tracts, muscles and tendons, eye and ear. Local symptoms are more commonly present and more severe with metastatic foci. The character of the symptoms upon which the diagnosis of metastatic infection depends is determined by the location of the lesion and by the severity and duration of the inflammatory reaction, and is affected by the activity of the primary focus responsible for the lesion. The injured part may recover

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from the first infection, with or without the removal of the primary focus, but, after repeated re-infection, structural changes occur which result in permanent disturbances of function and, unless the area can be removed by operation, complete amelioration of local symptoms is impossible. If these few essential points referring to the development of focal infection from primary and metastatic foci are borne in mind, it will be less difficult to understand the lack of uniformity in the results of treatment following the removal of foci of infection in patients suffering from apparently similar clinical conditions. One can appreciate more fully the importance of a complete diagnosis before recommending a plan of treatment.

In the search for foci of infection as a cause of local disturbances of function or of general ill-health, it is not sufficient to confine one's efforts in diagnosis to their detection. One should try to determine if the foci found are causing any systemic disturbance. Are they the primary cause of the disability? Or, as more commonly occurs, are they a secondary etiological factor affecting the progress of a diseased condition due to another cause? In the first instance, the removal of foci of infection will prevent the possible future development of systemic disease from these areas. If focal infection is the primary cause of ill-health, and all foci of infection have been found and can be eradicated, one may expect that the patient's health will improve, and a cure or a marked amelioration of symptoms result. In the instance of focal infection as a contributing cause, the treatment of foci is necessary but must be considered as supplementary to the recognized treatment of the cause of the primary condition present. This conclusion may appear too obvious for mention, but one sees too frequently patients suffering from a mild exacerbation of a chronic nephritis, a mild diabetes mellitus, a mild hyperthyroidism or Addison's "pernicious" anæmia, in which foci of definite infection have been removed and the primary cause of ill-health overlooked. Sufficient has been said to stress the necessity of an accurate and complete diagnosis in order that the most effective plan of treatment may be carried out.

The exclusion of focal infection as a possible cause of chronic disease is a difficult problem. Often the data obtained from the clinical history

and the routine physical and laboratory examinations suggest focal infection as a likely cause of the patient's symptoms. Disease in likely sites of focal infection appears to be absent. The physician here requires the assistance of the specialist skilled in the examination of the eye, ear, nose and throat, the gums and teeth, and in the interpretation of x-ray findings, to help prove or exclude the existence of focal infection before a final and complete diagnosis is made. In this combined diagnosis, which often ends in a combined treatment, a closer cooperation than exists at present and a better common understanding of the problem of focal infection are necessary for the more effective treatment of the patient. The reasons for this must be obvious. By the time a patient consults his physician, or goes direct to the specialist, the effects of a focal infection are seldom local. In the treatment of a patient with a badly infected tooth or tonsil, it is not simply a question of the advisability of its removal. A more important question is the possible co-existence of systemic disease or metastatic infection and whether or not another disease condition contributing to the patient's illness is present. One may not realize that the same therapeutic measure may be chiefly preventive in one case and chiefly curative in another. A specialist treating focal infection should caution his patient as to the possible existence of systemic disease and refer him to his family physician for a general examination. If systemic disease is suspected, he should refer the patient to his physician before attempting operative treatment, as systemic conditions may be aggravated by the too early removal of foci. Both physician and specialist should insist that the patient return periodically after the operation to observe the effect of the treatment. Complications requiring prompt attention may develop after operation, or symptoms suggesting activity of latent metastatic foci may appear, or the presence of another disease condition overlooked in the first examination may become manifest. An incomplete recovery is an indication for re-investigation of the case.

Family physicians should examine their patients periodically for early signs of focal infection. After all, has not the family physician the greatest opportunity of detecting the beginnings of primary focal infection and recommending early treatment which may prevent the

later development of serious systemic disease? If repeated minimal infections from primary foci, occurring in childhood and adolescence, were prevented, who can estimate the effect it might have in preventing the development of the degenerative diseases of middle life?

The treatment of patients should be based on the results of an accurate and complete diagnosis, remembering always that it is the patient with a focal infection that requires treatment and not the focal infection alone. Even though focal infection is the only cause found for the patient's ill-health, more than local treatment is required. The general condition of the patient must be considered and appropriate measures prescribed to aid in making the recovery as complete as possible. As an

aid in the recovery from existing infection and the prevention of later infection, attention must be given to the correction or prevention of factors, such as, unbalanced diet, extreme fatigue, exposure to cold, dust and trauma, which lower body resistance and predispose it to later infection of all kinds.

In conclusion, then, a plea is made for a fuller appreciation of the causal relationship of focal infection to chronic disease conditions, a more complete treatment of patients, greater attention to the study of the after-effects of treatment, and a closer cooperation between physician and specialist, that our patients may receive the maximum benefit from the removal of foci of infection.

HEART CONDITIONS SIMULATING ACUTE ABDOMINAL SYMPTOMS*

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THIS is a most interesting and vital subject, one upon which may hinge a patient's life. It brings up those finer points of diagnosis the final analysis of which may place the immediate future of the patient in the hands of the internist or the surgeon. I have deliberately refrained from presenting a detailed account of the electrocardiographic or x-ray picture that is more or less typical of the heart conditions under consideration because, in the majority of cases, a diagnosis can be made from a careful history and clinical examination of the patient. In the last fifteen months, I have seen four cases of coronary artery thrombosis which were sent into hospital with the diagnosis of acute abdominal emergency. Moreover, current medical journals in practically every issue report cases of a similar nature. Discussion of these cases is, therefore, not a matter merely of academic interest but one which primarily concerns the general practitioner.

In opening I should like to present three cases which illustrate the points to be taken under consideration.

* A post-graduate lecture delivered before the Lunenburg-Queens Medical Society.

CASE 1

Mr. B., a farmer, aged 46, was admitted to the Victoria General Hospital, Halifax, on January 20, 1930, complaining of severe pain in the epigastrium. He was in a condition of shock, and was sent into hospital with a diagnosis of a ruptured gastric ulcer.

Personal history.—He had had acute rheumatic fever seven years previously. During the past two years he had experienced increasing shortness of breath and had had several attacks of moderately severe pain in the stomach, which were labelled acute indigestion, and for which he was placed on a dietary regime. Two days before admission he was suddenly seized while walking with a severe colicky pain in the epigastrium which required large doses of morphine for relief. This attack was repeated the following day while he was in bed and he was rushed to hospital as an abdominal emergency.

Physical examination.—On admission to hospital the patient was cyanosed, in great distress, and complaining of steady severe pain in the epigastrium. The abdomen was distended, the percussion note was tympanitic throughout, the upper abdominal muscles were rigid, but not board-like, and there was tenderness along the right subcostal margin. There were râles at the bases of both lungs. The heart was somewhat enlarged to the left; no murmur or friction sound was detected. The arteries were soft; pulse rate was 140 with a tic-tac rhythm, and regular; blood pressure, 112/42. The leucocyte count was 18,000. A diagnosis of coronary artery thrombosis was made, which was proved correct the following morning by obtaining a characteristic electrocardiographic picture.

CASE 2

Mr. J., a farmer, aged 45, was admitted to the Victoria General Hospital on November 3, 1929, complaining of severe pain below the sternum.