

scope), which corresponds to the urologist's cystoscope; and (B) *Diagnostic exploratory suction*, which corresponds to catheterization of the ureters, the method which he introduced and practised for many years.

#### Difficulties in Eradication of Focal Infection.

"Complete success in dealing with a discovered focus may be disappointing in result, owing to multiple or secondary sources of infection.

"Difficulties," says the author, 'are made to be overcome,' and though their recital may appear very disconcerting, yet they may be mostly surmounted in practice when understood and recognised.

"The mental hebetude and physical lethargy of hypothyroidism disappears with the exhibition of thyroid gland extract: it seems simple enough now the 'difficulty' is understood. Yet many still in practice can recall those days before thyroid gland therapy, when even the pronounced form of myxœdema passed unrecognised, the mental hebetude being allowed to drift untreated till oft-times the patients were insane, the cretin imbecile. Nowadays the clinical picture alone suffices for diagnosis even before we confirm suspicions by directing attention to the thyroid gland. So with 'focal sepsis' there is no mystery, its difficulties and its problems have only to be understood."

#### Pathogenesis of Focal Sepsis.

The author points out that "acute infection by organisms is often arrested without apparently penetrating the surface epithelium when well resisted at the seat of origin by tissues defences, and the outpouring of leucocytes and phagocytosing polymorphonucleus.

"The chief causes for sinusitis failing to undergo spontaneous resolution are: (1) Anatomical irregularities obstructing free drainage of infective discharge; (2) Virulence of the infection, or low tissue defence. Correspondingly the essential aim of treatment of established sinusitis amounts to counteraction of these two factors."

The acute and chronic infective invasions are then compared, thus a "highly virulent infection, for example, in the frontal or sphenoidal sinus may overwhelm all tissue resistance, involve the meninges, or entering the blood stream reach other destinations by metastasis with hardly mitigated virulence."

"Chronic low-grade pyogenic infections on the other hand even when equally disastrous in the long run, are usually so quiescent—at least in their earlier manifestations—as to elude discovery unless suspected and sought for."

It should be noted that infection of low virulence means of low virulence to the patient. "Although a diphtheritic fibrinous rhinitis in a child may cause little disturbance to the child's health, the Klebs-Loeffler bacillus may be of high virulence when it spreads to contacts, and hence an epidemic of virulent diphtheria may occur from the low grade diphtheritic rhinitis of the first case."

An interesting point is the selective affinity of organisms and toxins for particular tissues. Thus strains of streptococci from the mouth or tonsils of patients suffering from rheumatism, arthritis, or myositis on intravenous injection in animals produced arthritis or myositis, those from ulcers of the stomach showed marked affinity for the mucous membrane of the stomach, and so forth.

The importance of a case history in the diagnosis of focal sepsis is emphasised for "attacks of illness due to septic infection may involve a patient at different times and in many different directions. Now if, because separated by intervals of recovery, each attack be regarded as a separate clinical entity, their recital makes but wearisome reading, as uninteresting as the jumbled pieces of a jig-saw puzzle; yet when all are pieced together the patient's complete medical history may afford a composite clinical picture

which forcibly suggests the interdependence of the apparently disconnected attacks on one common factor."

The author gives an example of a case which "affords one of the clearest examples of 'focal sepsis' suggested by the medical history alone," in a patient whose history was one of recurring febrile colds. About 1900 he had left antral empyema with dental sepsis, alveolar drainage; in 1910 the antral opening was allowed to close. Between this date and 1927 he suffered from laryngitis and was prone of colds, cacostmia, febrile attack, septic foot, appendectomy, cholecystitis (operation febrile attacks), neurasthenia, concentration poor, nervous breakdown, *septic pneumonia*. In October, 1927, after nasal inspection, a radiogram, and exploration of the involved antrum by sucking a sample of its infective contents into a syringe for bacteriological examination was followed by per nasal drainage of the left antrum. In 1928 an operation was performed for intestinal obstruction from which there was a quick recovery, since which time the patient has continued in perfect health and activity.

In such a case a nurse with knowledge and vision could be of great service to a medical practitioner by eliciting the history of the patient, which clearly shows that the source of sepsis, exhibited in so many different forms, is an infected nasal sinus.

Other equally interesting and illuminating cases clearly demonstrate how often sepsis in the nasal sinuses when the primary focus manifests itself in various parts of the body over a prolonged period of ill health alternating with healthy intervals, and the brilliant results which follow adequate treatment of the nasal trouble.

One case of neurasthenia progressing to delusional insanity and suicidal impulses was cured by operation on the maxillary antra and frontal sinuses, and has occupied the responsible position of bank manager for a period of sixteen years uninterrupted by any illness.

#### Sinusitis in Children and Familial Infection.

The author states that sinusitis in children is more frequent than has hitherto been supposed, and for the last twenty years he has made a practice of suck-exploring the maxillary antra as far as practicable when operating on tonsils and adenoids. He emphasises the "carrier infectivity" of chronic sepsis, and the tendency of parents, or children suffering from nasal sinus focal infection to infect their children, or brothers and sisters.

#### The Influence of Focal Sepsis on Mind and Character.

One of the most striking chapters is that on "Regional Complications," particularly in connection with the Central Nervous System. "Difficulty in thinking clearly, almost amounting to slow cerebration is very frequently present in fronto-ethmoidal or sphenoid-ethmoidal sinus suppuration, and sometimes in no less marked degree even in simple maxillary sinusitis. Many patients have come with drawn expression and sallow complexion, expressing their weariness of life and a profound melancholia which was quite foreign to their natural state of mind—symptoms which have completely disappeared with the removal of their sinus disease; sometimes it has been difficult to recognise in the round-faced cheerful individual one who shortly before treatment was a haggard melancholic."

Again, attention is called to the intimate anatomical relationships between the roof of the nasal fossæ and the paranasal sinuses and the brain. These facts help to explain the particularly frequent relationship of nasal sepsis to disturbances of mind and character and also why the mental outlook, as well as the physical disabilities, improve so quickly as a result of operative removal of the source of sepsis in the teeth, tonsils and adenoids, or in chronically infected sinuses.

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