

LEUKAEMIA OF THE FRONTAL SINUS IN A CASE WITH SUPERNUMERARY SINUSES IN EACH SIDE.

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The subject of Leukæmia is always a most interesting one to the pathologist. The lymphatic variety is of very uncommon occurrence, and certainly the invasion of the accessory sinuses of the nose by this disease is extremely rare.

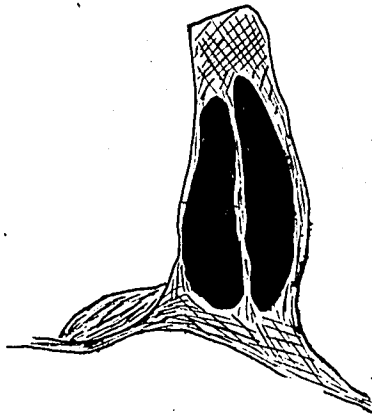
The patient from whom the specimen was taken was a man of middle age, who came under the care of a general surgeon, suffering from extreme pain over the right eye, in the region of the frontal sinus. A diagnosis of empyema of the right frontal sinus was made. The man was informed of his condition, and readily gave his consent to any procedure which would afford him any relief. Accordingly, under chloroform anæsthesia, the right frontal sinus was opened and drained. The operation was followed by no amelioration of the pain, and shortly after symptoms of meningitis developed, soon to be followed by a fatal termination.

The autopsy, at which I was invited to be present, revealed the existence of a double frontal sinus on each side. The secondary sinuses in each case lying immediately behind those in the normal situation, and corresponding very closely to them in size and shape. Each sinus was distinct and separate from the others. Each posterior sinus opened by a separate passage into the middle meatus of the corresponding side. Neither passage had any connection whatever with the openings from the anterior sinuses. The right posterior sinus was found filled with pus and caries of the posterior wall was present. On removing the skull cap a diffuse, suppurative meningitis was disclosed; which had resulted evidently from direct extension from the right posterior sinus, and which had proved the immediate cause of death.

While the anterior boundaries of each of the anterior cavities were somewhat thinner than common, yet there was not as great a discrepancy as existed in the posterior walls of the cavities lying immediately behind. Here on each side a mere shell of bone separated these spaces from the interior of the cranium. In the case of the sinus on the right side this thin partition, as a result of the weakening of the bone plate, from degeneration, assisted possibly by increased pressure within the sinus, had given way and a very small

perforation was the result. The anterior and posterior cavities on either side were separated from each other by a very thin but quite dense lamina of bone. This lamina on the right side showed no evidences of the caries which had involved the posterior wall. The mucous membrane lining all the sinuses was markedly swollen; so much so as nearly to fill the sinus cavities.

Four pieces of mucous membrane taken from the four respective sinuses were given me for microscopical examination. No suspicion of the true condition existing, was entertained at this time. The specimens were hardened in a solution containing equal parts of Mueller's Fluid and ten per cent formalin; imbedded in paraffin and stained after the method of von Giesen. The specimens all showed a similar condition as seen in photograph. The mucous and sub-mucous tissue was infiltrated with lymphocytes in a most striking manner. This infiltration was uniform and of about the same degree



in all of the specimens examined. The regions immediately surrounding the blood vessels were, on the whole, more densely packed with lymphocytes than other localities. Several of the blood vessels seen in cross section revealed the lymphocytes lying within the lumen of the vessels, interspersed with the red blood corpuscles. The upper right hand portion of the photograph shows a vessel cut in longitudinal section with several lymphocytes seen scattered among the red corpuscles. To the left and below, but less distinctly seen, is a vessel cut in cross section, showing two or three lymphocytes within its lumen. In the upper portion of the field is seen the mucous membrane lining the sinus and wedged in between the epithelial cells, here and there may also be seen occasional lymphocytes. (This was shown more clearly in one of the other sections.)

This case has a two fold interest in that it exhibits anatomical as well as pathological peculiarities, neither of which are common. To have exhibited in the same patient, in addition to the pathological condition above referred to, the interesting anatomical anomaly of a double frontal sinus on each side, is quite a striking coincidence.

The uncertain process of bone resorption by means of which these cavities are created favors in the highest degree the occurrence of the greatest departures from the normal in both size and shape. Indeed, it would be a difficult problem for an anatomist to attempt to define with accuracy the dimensions of what should constitute a typical frontal sinus. Hajek "*Pathalogie und Therapie der entzündlichen Erkrankungen der Nebenhöhlen der Nase*" mentions among others the following departures from the more common forms.—Displacement of the septum between the sinuses to either side. Opening connecting the two sinuses with each other. Entire absence of septum whereby the sinuses coalesce to form one cavity. Unusual extension of the sinus cavity upwards. Extension backwards even as far as the junction with the lesser wing of the sphenoid in some cases. Extension downward deep into the superior nasal spine. Owing to malformations, there may be a communication between the sinus and the corresponding orbit, or even openings between the sinus and individual ethmoidal cells. Zuckerkandl saw in one case, as a result of senile atrophy, an opening by means of which the frontal sinus communicated with the cranial cavity. It would seem, therefore, that the occurrence of two sinuses exactly alike in size and shape, far from being the rule would be, on the contrary, quite the exception if indeed it might not be considered even as a coincidence.

While the variations in size and shape are common, I believe, the presence of additional sinuses entirely distinct and separate from those in the usual situation, are of quite infrequent occurrence. More extensive investigations, may, however, reveal their existence more frequently than we now suspect. Certainly in operating for empyema of the frontal sinus, it were well to bear in mind at least the possible presence of these additional cavities and their corresponding liability to undergo the same pathological changes as affect the other accessory sinuses.
