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REPORT OF A CASE OF NASAL SARCOMA CURED
BY RADIUM.*

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F. L., aged twenty years, presented himself July 2, 1916, complaining of complete nasal obstruction, profuse attacks of epistaxis and severe headaches.

Examination revealed the following: A young man, tall, dark complexion, anemic, poorly nourished, mouth breather, right eye protruding so that the lids could not cover the ball, anterior nares excoriated from nasal discharge, nasal bridge widened and tissues round about thickened, altogether giving the frog-like facies. Right nostril was entirely blocked by a pale colored, fairly hard mass, excepting in spots where there was local necrosis showing areas of sloughing surrounded by hemorrhagic oozing. The tissue bled freely on manipulation, and especially so on application of adrenalin. As far as could be determined, the tumor seemed to originate from the right ethmoid region. The septum was intact and with no adhesions between it and the tumor. The left nostril was not invaded, being open. The nasopharynx was entirely filled by the tumor plugging both posterior nares. A probe introduced into the left or open nostril could be passed around the mass in the epipharynx. Bleeding always resulted from such instrumentation. The patient suffered acutely from constant headache and the attacks of epistaxis. The right sinuses showed dark on transillumination. The skiagraph demonstrated shadows in the region of the right antrum, ethmoid and nostril.

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Examination of the eye by Dr. George Suker revealed optic nerve atrophy, no swelling of discs, veins some tortuous, arteries likewise, disc edges blurred and adjacent retinal area shows grayish cast. Has a large and painful mass of cervical lymph gland on left side of neck; scar shows incision of former years. No family history of malignancy, no cough, no other evidences of pulmonary tuberculosis. Wassermann negative. Nasal obstruction came on gradually some months before presenting himself. A diagnosis of sarcoma was made from the patient's age, the history, general appearance and local findings. This was confirmed by microscopic examination of tissue removed, which showed small round cell sarcoma.

On our refusal to operate the patient disappeared. Presenting himself at the County Hospital, an attempt was made to remove the tumor by way of the anterior nares. The hemorrhage was severe. An infection resulted, necessitating an external incision over right malar region to liberate pus. Sections of the tumor removed demonstrated round cell sarcoma. After six weeks the patient again presented himself to us for relief. His appearance was similar to what it was when first seen, only his condition was worse. He did not look as if he could live much longer, being very weak and anemic, and on account of pain in his head had little rest day or night excepting what he got from sedatives. He was immediately placed on radium treatment. One hundred milligrams of radium was applied uninterruptedly for five hours on three consecutive days. Nineteen days later this was repeated, excepting that it was continued for six hours each day. Thirty days later fifty milligrams was applied for four hours, and sixty days later fifty milligrams was applied on two consecutive days for six hours each. In addition, radium was applied to the large painful gland mass on left side of neck. A total of forty-one hundred milligram hours of radium was used about the nose and twenty-one hundred and twenty-five milligram hours of radium was applied to the enlarged glands. The details of the radium treatment is appended, kindly compiled for me by Dr. Albert Woefel of the Physicians' Radium Association, who furnished the radium used.

RADIUM TREATMENTS OF CASE OF SARCOMA OF NOSE

Dates	Dose	Screen	Exposure	Position	Mgm.Hrs.
Sept. 25, 26, 27.	50 mg.	1 mm. lead-black paper and rubber.	5 hours..	Rt. post. nares..	750
Oct. 16, 17, 18..	50 mg.	1 mm. plat. and rubber	6 hours each....	Rt. post. nares..	900
Nov. 21.....	50	1 mm. plat. and rubber	4 hours..	Rt. post. nares..	200
Jan. 23, 25.....	50	1 mm. plat. and rubber	6 hours each....	Rt. post. nares..	600
					2450
Sept. 25, 26, 27..	25 and 25..	2 mm. lead and rubber.	5 hours each....	Varying positions around orbit.....	750
Oct. 16, 17, 18..	25 and 25...	2 mm. lead and rubber.	6 hours each....	In V-shaped position on temporal side of right orbit....	900
					1650

Nov. 14.	50 and 50 and 25 mg.	2 mm. lead and rubber	6 hours.	On left cervical glands.....	750
Nov. 16.	50 mg.....	2 mm. lead and rubber.	10 hours.	On left cervical glands.....	500
Nov. 17.	50 and 25 mg.....	2 mm. lead and rubber.	6 hours.	On left cervical glands.....	450
					1700
Jan. 23.	25 mg. (flat).....	1.5 mm. lead and rub- ber.....	4½ hours	On upper part of neck.....	112
Jan. 25.	25 mg. (flat).....	1.5 mm. lead and rub- ber.....	6½ hours	On upper part of neck.....	163
Jan. 27.	25 mg. (flat).....	1.5 mm. lead and rub- ber.....	6 hours.	On neck.....	150
					425

In employing the remedy the object was to use large doses over a medium period of time, correctly screened and properly applied within the nose and on the face to secure the greatest benefit from cross firing. The immediate results from this treatment were brilliant. All of the severe pain and the nasal hemorrhage disappeared before a week went by. A week later he was breathing through his left nostril, and some air could be detected passing through on the tumor side or right nostril. Three months later respiration through both nostrils was normal, and he could blow nostrils naturally. Inspection showed the progressive shrinking of the tumor and disappearance of all ulcerations. The rhinoscope demonstrated the tumor springing from the posterior ethmoid region. This would explain the appearance and changes about the right eye—namely, exophthalmus, nerve atrophy, tortuous veins, etc. The optic nerve and vessels are more vulnerable in the neighborhood of the sphenoid sinuses; but where a posterior ethmoid cell occupies this relative position, then the nerve becomes correspondingly more susceptible from this source. From various anatomic studies this relationship of the posterior ethmoid cell to the nerve occurs in a small per cent of cases. Meckel's ganglion, the source of sensory impressions in and about the nose, orbit and sinuses, nestles in the sphenomaxillary fossæ, just below the posterior ethmoid cell and in front of the sphenoid and back of the apex of the antrum of Highmore. A tumor in this region can produce severe pain corresponding to that complained of by the patient.

On last examination of the patient no evidence of tumor could be seen within the nose or nasopharynx, although I believed some still existed within the ethmoid labyrinth. Three weeks after seeing him last he was reported as being confined to bed at home with a temperature, pain in abdomen, nausea, constipation, tympanitis, and a cutaneous eruption over left half of face. Not being able to visit him, he was directed to be sent to the hospital for examination. Disregarding this request, he remained at home, under the care of his family physician, who reported to me a few days later that the patient was suffering from metastasis and that the malignancy was manifesting itself in the intestines, causing severe pain, tympanitis, vomiting, and great weakness. It was stated that

he would not survive this serious sequela. It was further stated that, aside from a cutaneous eruption on the left side of face, the patient had no symptoms whatsoever referable to his head.

After ten days of illness he died. A request for an autopsy was made and granted. I opened and examined the head. Dr. McKerrihan of the Postgraduate Hospital examined the abdomen. After removing the calvarium and brain, exposing the interior of the base of the skull, examination showed no invasion. The entire tegmen of the right orbit, frontal sinuses and nasal fossæ was removed, exposing the interior of these respective cavities, which showed neither the presence of or any evidences of their invasion. The antrum and sphenoid were likewise free. The posterior ethmoid cavity was large, extending far backward, and overlying in part the neighboring sphenoid cell, which was very small. The lining membrane appeared greatly hypertrophied, the optic nerve course was alongside the cell. The middle turbinate was not present excepting a small bit posteriorly. The anterior ethmoid cells had been broken down by previous operation. No tumor could be found anywhere. These findings affirm the previous statement that the tumor had its origin in the right ethmoid region, and owing to the anatomic arrangement present, the nerves and vessels were subject to pressure. As far as the head was concerned, the patient was cured of his sarcoma.

The examination of the contents of the abdominal cavity disclosed, aside from a distended gall bladder, a perforated appendix lying in a bed of pus and exudate. Neither within nor upon the surface of the body was found evidence of metastasis. The eruption on the face was herpetic, toxic in origin, and an early manifestation of an infection that was overlooked. The patient most unfortunately came to an untimely death as the result of peritonitis caused by perforating appendicitis.