

a contra-indication to the use of the natural method of drainage. A simple spilling of pus during the course of the operation is not a dangerous complication, provided the general abdomen has been well walled off with gauze or sponges, and that the pus is immediately sponged out. Several speakers who have said that they have gradually stopped the use of drainage have shown that their results are better now than ever before. If they go one or two steps further along the line of progress, I think they will probably find that their results will be even much better yet.

The point emphasized by one or two speakers as to the action of virulent streptococci is well taken. I do not, for one moment, feel that salt solution will wash out all the germs from the peritoneal cavity, but I do believe that we eliminate more debris and foreign matter in this way than in any other, and subsequently, the leaving behind of salt solution greatly facilitates the rapid absorption of matter which is not removed by irrigation. If a virulent streptococci infection is present, I do not believe that a barrel of salt solution will save the patient, and, at the same time, I do not believe that yards of gauze drainage will effect any better results. These are the sporadic cases which terminate with the symptoms of the most virulent poisoning. Some of the gentlemen present who have misinterpreted my remarks, seem to think I have advocated the complete abandonment of drainage. If they will read my "Indications for Drainage" they will find that this is by no means the case. In my paper I have endeavored to put upon a scientific basis the routine employment of peritoneal infusions of salt solution. Outside of the postural method of drainage which I advocated in my first paper in 1896, I claim no originality in the use of salt solution as other operators had employed it before I took up the subject.

My object has been to endeavor to explain on a scientific basis the undoubted benefits derived from the liberal employment of peritoneal infusions.

PRIMARY CARCINOMA OF THE NASOPHARYNX. A TABLE OF CASES.*

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Primary carcinoma of the nasal fossæ is rare, yet most rhinologists of considerable experience have seen cases. Primary carcinoma of the nasopharynx is so rare, judging from the fewness of reports, that but few rhinologists have had even one case. A careful search of the various indexes of the medical journals published in French, German, English, and Italian during the last twenty years has failed to unearth more than 14 cases. It is probable, however, that some reports have not been found; others have doubtless escaped because buried under misleading titles. Cases primary in the nasopharynx, later invading the oropharynx, velum, tonsil, nasal fossæ, antrum and brain, probably have been reported, if at all, as of these regions. Politzer¹⁷ mentions 5 cases where the Eustachian tube was involved by cancerous extension from the tongue and the superior maxilla, but none of these seem to have been primary in the nasopharynx. It scarcely seems possible that all medical records should contain so few as 14 cases of carcinoma of the nasopharynx, yet Moritz Schmidt,⁵ in a total of 32,997 nose and throat patients, did not meet with one case, though 75 of laryngeal carcinoma were seen. Reports of 5 cases were collected by Bosworth,⁶ in 1889, to which he added 1 of his own observation. To these I have added 8, including one of my own, making 14 in all, tabulating them as well as the incomplete reports would permit. The table is

incomplete, because 5 of the cases were evidently not under observation to their termination, and consequently only record symptoms to a certain stage. All of the cases were primary in the nasopharynx, with the possible exception of Lotzbeck's,³ in which the nasopharyngeal portion was discovered at the autopsy. So small a number of cases is not a very safe basis for deductions; yet we must draw conclusions by the light we have. Before proceeding to the consideration of the table, I beg leave to give the history of the case that came under my observation.

On March 5, Miss J. P., aged 23, a cork-worker, was referred to me by Dr. Leon Sadowski. She was white, American born, of German parentage, her family history negative as to cancer, syphilis and tuberculosis, and no personal specific history. She complained of constant lancinating pain in her right cheek, above her right eye, deep in the right ear, and in and under the right lower jaw, so severe at night that she had been unable to sleep for three months. Dr. Sadowski stated that during the few days she was under his care one-half grain doses of morphin had no effect. Prior to three months, the pain had been intermittent for a year. Right nasal stenosis was first noticed three weeks previous to her consulting me, but had probably existed longer. The discharge anteriorly and posteriorly was odorless, thick and yellow, with no admixture of blood, and there was no history of hemorrhage. There was infiltration and tenderness of the cervical, parotid and submaxillary lymphatic glands. Ankylosis of the jaw prevented separation of the incisors more than one-half inch. The face was asymmetrical, the right cheek somewhat swollen, the general appearance of the patient somewhat cachectic, and the temperature subnormal, 97.6. Dr. Theodore Diller, after a careful examination, reported the functions of the fifth and seventh nerves unimpaired, and the brain uninvolved. Dr. C. A. Wishart kindly examined the eye-ground and reported a low-grade optic neuritis in both eyes: Visual acuity, O. D. 15/30; O. S. 15/70.

Upon inspection of the fauces I found a slight redness and infiltration of the right pillars and a bulging downward of the velum on the right side. The rhinoscopic mirror brought into view a large cauliflower-like mass completely hiding the right choana and fossa of Rosenmüller, and burying from view all of the Eustachian prominence except the border of the orifice, which was in line with the vomer, owing to the swollen and infiltrated condition of the eminence. This lateral mass was in contact with large masses of adenoid tissue which hung downward from the vault, and which in appearance differed from adenoid hypertrophy only in a red-bordered ulceration at the free extremities of some of the masses. The jaws could not be separated sufficiently wide to permit the finger to reach the vault, but on palpitation through the velum a soft pulsatious mass could be felt above a harder mass, which latter was evidently the infiltrated Eustachian prominence. On anterior rhinoscopy after depletion with adrenalin and cocain, a grayish-pink mass could be seen back in the nasopharynx, but it was apparently not attached to the turbinals, and was certainly not in the nasal cavities. Several fragments of the growth were removed anteriorly with alligator forceps. Pending a report the patient was put on a specific treatment, with large doses of morphin and antipyrin to control the pain. Microscopic examination of the fragments, by Dr. Edward Mayer, showed nothing to indicate malignancy. For the purpose of getting a more satisfactory specimen, and of making a digital examination, the patient was chloroformed, a gag inserted and the rigidly ankylosed jaws forced open. The finger determined the growth to spring from the right wall of the nasopharynx, both anterior and posterior to the Eustachian eminence; though the point of greatest degeneration, and therefore probably of origin, was at the junction of the vault with the right wall of the nasopharynx, between the Eustachian orifice and the choanal margin. The pterygoid plates could be plainly felt as the soft degenerated tissue gave way under the finger. The right Eustachian eminence was three times the size of its

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fellow, and quite hard, except on its anterior aspect, where it was ulcerating. The posterior ends of the middle and inferior turbinals were infiltrated, but not breaking down, evidently having been but recently involved. With the aid of Dr. Milligan I removed all of the growth that would come away readily, along with the involved right Eustachian eminence, by means of the cold snare, Gottstein curette, side curette and Juraz adenoid forceps. The masses aggregated the size of a hen's egg. Anterior and posterior plugs were necessary for hemorrhage. Dr. Edward Mayer examined sections of the growth microscopically and reported it to be a columnar epithelioma.¹⁴ Dr. Linnæus H. Prince, of Philadelphia, pronounced it glandular-celled carcinoma. There is now, three months after the operation, a deeply excavated ulcer at the junction of the vault with the outer wall. The region of the removed Eustachian eminence is slightly swollen and infiltrated, but there seems at present no tendency to repullulate. The nasopharynx is free and roomy, the choanal margins are visible all around and free from encroachment. The powder insufflated posteriorly

been above normal since the post-operative rise of 1.5 degrees; it is, however, often subnormal, occasionally down to 97 degrees. There is no hemorrhage, no blood in the discharge, which is muco-purulent, small in quantity, never acrid and there is absolutely no fetor.

ETIOLOGY.

Sex.—This does not seem to be a factor, as the cases are nearly equally divided, 57 per cent. being males, 43 per cent. females. This is in marked contrast to cancer of the larynx, where about 75 per cent. are males, and in greater contrast to cancer of the oropharynx, where about 90 per cent. are males, and in still greater contrast to cancer of the lip, where practically all cases are males. Moritz Schmidt, in a total of 32,997 nose and throat patients, found carcinoma in the nasal passages in 5 (3 males, 2 females), 60 per cent. males; in the nasopharynx in none; in the oropharynx in 16

No.	Age.	Sex.	Reporter.	Family History.	Nativity.	First Symptom.	Ear.	Eye.	Fixation Max.	Pain.	Discharge.	Odyn-phagia.
1	75M.		Durand-Fardel			Dysphagia, Dyspnea.						
2	50M.		Maissonneuve.									
3	37F.		Lotzbeck					R. and l. amaurosis exophthalmos.			Fatal hem. from inf. max. carcinoma, not naso-phar.	
4	39F.		Flour.			Adenopathy	R. deafness.	Contract pupil, press. on sympathetic.		Slight.	Epistaxis.	
5	65M.		Schmidt			Coryza; bloody discharge.					Bloody muco-pur. Epistaxis.	
6	59F.		Bosworth.			Discharge; r. nasal stenosis.				Slight throughout.	Bloody, fetid muco-pur.	
7	45M.		St. Mary's Hospital.	Acquired syphilis		L. nasal stenosis.		L. corneal anesthesia, l. int. strabis.	Present.	Headache, left side.	Bloody muco-pur.; r. epistaxis.	Late.
8	40M.		S. A. Fox	Negative.		Otalgia, deafness, autophony.	Otalgia, deafness, autophony.	Invaded, diplopia, strabismus.		Sharp in ears, Headache.	Fetid muco-pur.	
9	63F.		McBride.			Otalgia, "pain throat."	Otalgia.			Ears and throat.	Bloody expectoration.	
10	14M.		J. M. Elder.	Mother, cancer, liver and stomach.	Canada; Irish parentage.	Adenopathy.			Present.	Severe at base of brain.	Not fetid, muco-pur.	
11	40M.		E. J. Brown.	Mother, abdominal tumor.		Chr. catarrh, r. otalgia; tinnitus, deafness.	Otalgia, tinnitus, deafness.			Otalgia, headache.		
12	56F.		Robertson.	Abdom. tumor, obstruction of bowel.		L. otalgia; l. anosmia; l. nasal sten.	Otalgia, 2 attacks, l. o. m. a. recovery.	Pain.		Ears, eye.	Muco-pur.	Present.
13	42M.		Roncalli	Negative.	Italy.	Bloody discharge; otalgia.	Otalgia (darting).		Present.	Darting l. ear, l. side face.	Bloody muco-pur.; epistaxis, hemor. fauces.	
14	23F.		Ch. Jackson.	Negative.	U. S.; German parentage.	Neuralgia 5th n.; reflex.	Otalgia, cartilage, tube involved.	Optic neuritis. Pain.	At 6 mos.	Neuralgia, 5th nerve; otalgia. Later lancinating in growth.	Not bloody; not fetid; muco-pur.	None yet.

comes like smoke out of both anterior nares. The natural hollow externally at the angle of the jaw on the right side is filled out more than level by the infiltrated parotid glands, and this region is the seat of pain, which is often darting in character, shooting across the face to the temple and upper jaw. This and the "pain deep in at the root of the ear" are, or would be, severe at night, but are perfectly controlled by 1 grain of morphin sulphate at bedtime. There is occasionally a slight fluttering twitch on the right side of the face, such as we see when the facial nerve is touched in the tympanum. As the membrana tympani is normal and there are no signs of middle ear trouble, I have thought this due to pressure or irritation of the facial nerve, either immediately before or after its emergence from the temporal bone, probably by the infiltrated parotid lymphatic glands. There is now no fixation of the jaw, mastication is easy and painless, but the maximum separation of the incisors is one inch. Beyond this, severe pain is produced apparently by pressure on the parotid lymphatic enlargement. Swallowing is painless and unimpeded, all the palatine muscles moving normally. The temperature has not

(15 males, 1 female), 94 per cent. males; in the larynx in 75 (61 males, 14 females), 81 per cent. males.

Irritation.—This brings up the interesting question of the part played by irritation in the location if not causation of carcinoma. Most authorities now agree that, in general, irritation may favor the development of carcinoma, just as trauma does sarcoma; but the question that interests us is the bearing on the subject of the relative frequency of the disease in the nasal passages and larynx as compared with the relative rarity in the nasopharynx. My own opinion, based on fifteen years of observation of the upper air-passages of persons who inhale Pittsburg's smoky and dust-laden atmosphere, is that the nasopharynx is the most irritated portion of the respiratory tract. My case-books show an average of 48 cases of chronic catarrh of the nasopharynx to one of the larynx. We all know of the warming, cleansing and moistening duty performed in large

part by the abrupt turn of the nasopharynx. In doing this duty the mucous membrane is very much irritated. All this is so much the less irritation for the larynx. This organ has its duty of vocalization, but ordinary use of the voice does not irritate. In making the comparison the use of tobacco does not enter, as, in ordinary smoking and the "inhaling" of cigarette smoke the larynx does not seem to be subjected more than the nasopharynx to either direct contact with the smoke or continuity with tissue exposed to the direct contact. As shown by the relative frequency of carcinoma of the larynx and of the nasopharynx, then, it would seem that irritation was not a factor in the production of carcinoma.

Occupation.—This is only mentioned in a few instances, but in only one is it of a particularly irritating kind. Case 14 was a cork-worker, exposed to the very

This is the most irritated portion. At the upper part it is the seat of the pharyngeal tonsil, and if it were not for the rarity of the disease we might be justified in thinking the retrograde changes in this structure were a factor. In one case the growth appeared some years after removal of what appeared to be adenoids, giving rise to the queries: Did the benign growth develop malignancy? If so, was the irritation of removal a factor? Reasoning from analogy, we may conclude benign growths may become malignant, but operative removal is not a factor, as shown by Semon in disproving Lennox Browne's view that repeated endolaryngeal operations cause benign growths to develop malignancy. Delie¹⁹ reports "sarcomatous recurrence" after adenectomy. Age does not eliminate adenoids as a predecessor of malignancy, as we have all seen adenoids at 30 and over. In the writer's case there

Dysphagia.	Dyspnea.	Miscellaneous.	Origin.	Extension.	Lymph glands involved.	Secondary dep.	Operation.	Termination.	Clinical diag.	Microscopic Report.	Duration.
Obstructive.	Obstructive.		Posterior surface velum.	Oropharynx.	R. and l. cervical and parotid.	Lymphatic glands	None	Death by exhaustion, inanition.	Scirrhus.		
			Vault.				Exsection maxilla	Death by hemorrhage inf. max. carc.	Carcinoma		3 yrs. to date reported. "Some time."
		Paral. r. vocal cord; pressure of vagus by glands.	Vault.	Cranial and nasal cav.; r. orbit antrum; slight l. orbit.	R. cervical sup. and deep r. submax.	Lymphatic glands	None		Carcinoma		6 years.
Obstructive.							Gussenbauer resect.; both s. max; surv. few weeks.	Death.		Small-celled Medullary.	1 year.
			Vault.	Cranial cav., "brain symptoms," and healed.	R. cervical ulcerated and healed.	Lymphatic glands	Cold snare; palliative; surv. 1 year.	Death by exhaustion.		Medullary.	3 years.
Paralytic (?)		Par. of face; motor and sens. Vertigo	Left wall	Cranium, l. turb., l. antrum.	L. cervical submax. (?)	Lymphatic glands		Death.		Epithelioma	2 years.
				Cranium, l. orbit.	None		Annandale; survived two months.	Death.		Epithelioma	2 years.
			Right wall	Velum, right tonsil.	R. cervical.	Lymphatic glands	None			Epithelioma.	1 yr. to date of exam.
		Albuminuria tube casts.	Vault.		R. cervical; l. slightly.	Lymphatic glands	Lymph. glands extirpated; surv. 2 mos.	Death.		Scirrhus.	2 years.
			Vault.		R. cervical; l. cervical.	Lymphatic glands	Cold snare; extirpated lymph.	Death.		Epithelioma	5 years.
	Early, prior to obstructive.		Vault.		L. cervical.	Lymphatic glands	None			Epithelioma	1 yr. to date of exam.
		Temperature elevated.	Vault.				Galvanic ignition.	Death, marasmus, hemorrhages.		Telangiectasic carcinoma.	1 year.
None yet.	None yet.	Adenoids invaded, temperature sub-normal.	Right wall	None at this date.	R. cervical; r. parotid.	Lymphatic glands	Cold snare; curette for cepts.			Epithelioma (glandular-celled carcinoma).	1½ yrs. to date of report.

RESUME.

Number of cases, 14; 8 males, 6 females. Range, 14 to 75 yrs; mean, 46; 86 per cent. between 30 and 40; 57 per cent. males, 43 per cent. females.
Fam. History.—Negative, 3; cancer, 1; "abdominal tumor," 2; acquired syphilis, 1.
First Symptom.—Otalgia, 5; adenopathy, 2; nasal stenosis, 3; bloody discharge, 2; dysphagia, 1; neuralgia, 5th nerve, 1.
Ear.—Otalgia, 6; deafness, 3; tinnitus, 1. Otit. med. cat. acuta followed by recovery, 2 attacks in 1 case.
Eye.—Strabismus, 2; pain, 2; amaurosis, 1; exophthalmos, 1; corneal anesthesia, 1; diplopia, 1; optic neuritis, 1.
Fixation Max.—Present, in 4; not mentioned, in 10.
Pain.—Ears, 6; slight, 2; headache, 2; throat, 1 (?); neuralgia, 5th nerve, 1; lancinating in growth, 1 (?).
Discharge.—Muco-pur., 8; bloody, 5; fetid, 2; not fetid, 2; fetor not mentioned, in 10; acrid, no mention; epistaxis, 4; bloody expect., 2; none, 2; not mentioned, 6.
Odynphagia.—In 2; none, 1; not given, 10.
Dysphagia.—In 3; obstructive, 2; probably paralytic, 1; none, 1; not given, 9.

Dyspnea.—Obstructive, in 1; prior to obstruction, 1; none mentioned, 12.
Miscellaneous.—Face paralysis, motor and sensory, 1; vertigo and albuminuria tube casts, 1.
Origin.—Vault, 8; R. wall, 2; L. wall, 1; velum, 1; not given, 2.
Extension.—Cranial cavity, 4; orbit, 2; oropharynx, 2; none, in 1; not given, 7.
Lymph Glands Involved.—Cervical, in 9; (R. 4, L. 2, both, 3); parotid, 2; submaxillary, 2; none, 1; not given, 4.
Secondary Dep.—In lymphatics, in 9; none elsewhere. No carcinomatosis. One case nasopharynx, inf. max. and thyroid all involved.
Operation.—Radical preliminary, 3; palliative, 4; none, in 4; not given, 2.
Termination.—Death in 8; not given, 6; by exhaustion, in 2; by inanition, 1; by hemorrhage inf. maxilla, 1; immediate cause not given, 4.
Micro. Report.—Epithelioma, 6; scirrhus, 2; medullary, 2; telangiectasic, 1; variety not given, 3.
Duration.—Range, 1 to 6 yrs.; mean, 2 yrs. 9 mos.

irritating dust of the cork works, but this isolated instance is no basis for argument.

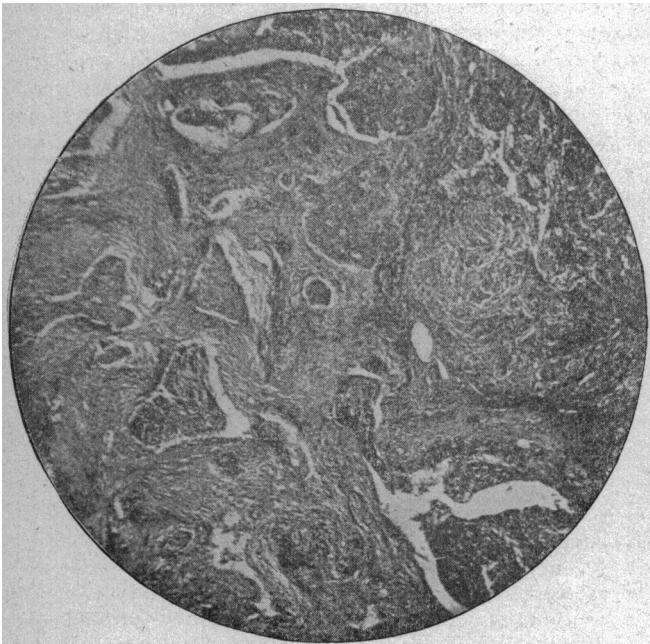
Location.—In 66 per cent. of the cases, where the location is given, the growth sprung from the vault.

were large adenoid masses not yet invaded by cancerous tissue, as demonstrated by the microscope, but whether they existed prior to the cancer, or whether the pharyngeal tonsil proliferated by reason of the peri-carcino-

matous hyperemia, the writer does not know. His opinion is that the adenoids were there since childhood, though they were not large enough to produce stenosis. In Case 13 Roncalli says "there is the presumption, sufficiently founded, that the adenoids had spontaneously changed into a malignant neoplasm."

Age.—This is a recognized etiologic factor in carcinoma. The age of the cases in our table may be analyzed as follows: 10 to 20, 1 or 7 per cent.; 20 to 30, 1 or 7 per cent.; 30 to 40, 2 or 14 per cent.; 40 to 50, 4 or 29 per cent.; 50 to 60, 3 or 21 per cent.; 60 to 70, 1 or 7 per cent.; under 30, 2 or 14 per cent.; 40 to 60, 7 or 50 per cent.; 30 to 80, 12 or 86 per cent. The text-books state that carcinoma of the nasopharynx is rare before 30, yet 14 per cent. of the reported cases occurred in the first three decades. The score between 40 and 60 includes half the cases.

Heredity.—All authorities agree as to heredity being a factor in carcinoma. Of the cases in our table the family history is only given in 6. In 3—50 per cent.—of these there was a history of cancer or "tumor"; in



3 cases—50 per cent.—it was negative. The right side seems to have been involved twice as often as the left, judging by the lymphatic infiltration, but we are apt to err in deductions from so few cases. Beyond the three etiologic factors, heredity, age and irritation, all is theory.

SYMPTOMATOLOGY.

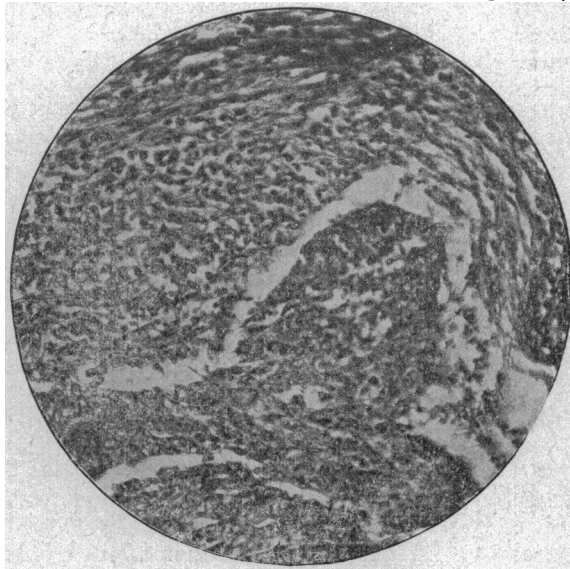
Of course there are the symptoms common to all nasopharyngeal growths; coryza, obstruction to nasal breathing, postnasal discharge, pain, and, late in the disease, dyspnea, dysphagia, odynphagia, otalgia and deafness. To these must be added, in malignant disease, cachexia and intracranial extension. Of the symptoms that are usually enumerated as pointing particularly to carcinoma in the nasopharynx may be mentioned pain, fetor, hemorrhage, bloody discharge, and glandular involvement.

Pain.—This characteristically lancinating at, or near, the seat of the growth, is reported in only 2 cases, though it may have been present in others, being referred to the ear or throat. Six of the 14 cases—43 per cent.—report otalgia. The laity can not describe the location of a sensation in the nasopharynx, and a

sensation arising on one side of the cavity is generally referred to as in the "root of the ear" of the corresponding side. Therefore we may conclude that of the 10 where pain is mentioned, 6 had more or less characteristic cancer pain. It was not characteristic in 3, and in 2 of these it was very slight. In Case 10 relief was sought for enlarged glands, the pain being slight early, but later—Dr. Elder informs me in a personal letter—it became very severe and was referred to the base of the brain, though without symptoms of meningitis or mental disturbance. Pain evidently may be: 1, reflex neuralgia due to irritation of nerve filaments, as in the early stages of Case 14; 2, aching from pressure of the growth on a nerve trunk, as in the later stages; 3, true lancinating pain in and reflected from the seat of growth, as characteristic of cancer elsewhere; or 4, very slight from the onset to euthanasia, as in Case 6.

Pain on swallowing would likely only be complained of early when the growth involves the velum, or, when late, its bulk causes the growth to be pressed by the velum in swallowing.

Fetor.—This is one of the most constant symptoms of carcinoma elsewhere on mucous surfaces, especially in



the stage of ulceration, but it is not mentioned in the reports of 71 per cent. of the cases. It may have been omitted, but it is so obtrusive a symptom that the observer is not likely to omit it. In Case 10 there was no fetor from the beginning to the death. This case was scirrhus, which usually is later in ulcerating than epithelioma. In Case 14 there never was any fetor though the growth had existed a year and a half, with ulceration for at least six months.

Hemorrhage.—This and bloody discharge, while set down in the text-books as usual symptoms, do not, from the cases reported, seem to be the constant accompaniment that is found elsewhere, in uterine cancer for instance. In the writer's case, after one and a half years' progress, there has been no bleeding or bloody discharge, except for a day or two after the growth was extirpated. In Case 10, Dr. Elder informs me there never was any epistaxis or other hemorrhage. In Case 13 hemorrhage was an early symptom, blood flowing from both nose and mouth, and an effort to get a specimen for microscopy resulted in such free bleeding that, the case being an out-patient, the attempt was given up.

Lymphatic Involvement.—The absence of lymphatic involvement would have been so remarkable that it would surely have been reported, so that we are justified in assuming it present when not mentioned, especially as in 3 of the 4 instances the diagnosis was not microscopic. No one would make a clinical diagnosis of carcinoma in the absence of lymphatic enlargement. Therefore we may count it present in all cases—93 per cent.—except one and possibly here the deep glands may have been infiltrated but not palpable, a possibility demonstrated by Lack¹⁶ in carcinoma of the tonsil, where they were discovered in an external radical operation. Glandular enlargement in the neck was the first symptom noticed by the patient in two instances, and seems to have been a very early symptom in the others, though set down in some text-books as late. It progressed slowly in all cases; and sloughed out and healed up spontaneously in one.

Intracranial extension.—This is mentioned in some of the text-books as a less frequent occurrence in sarcoma than in carcinoma. We find, in our table, cerebral extension in 50 per cent. of the cases that were observed to their termination. This is exactly the same percentage as in 14 of sarcoma under observation to the end. It would be misleading to base the calculation on cases the later history of which is not reported, because cerebral involvement is a late symptom. There seems remarkably little tendency to extend downward, only 2—14 per cent.—having reached the oropharynx. This, with the rarity of involvement of the velum, accounts for the rarity of dysphagia and odynphagia as symptoms. Dysphagia was present in one case before the bulk of the growth would interfere with deglutition. This may have been paralytic, or due to enlargement of the deep cervical glands lying close to the esophagus.

Cachexia doubtless was present in all the cases, but the date of its onset was not definitely stated so tabulation is useless. General carcinomatosis does not appear on the records, and metastasis appears but once,—Case 3,—though here there is some doubt as to where the disease was primary. In 2 of the cases reported no growth in the pharynx was suspected. In 1 case—No. 11—the patient came for the removal of enlarged glands supposed to be tubercular; in the other,—No. 14,—for trifacial neuralgia, for which exsection of the Gasserian ganglion had been urged, and would have been submitted to had not the patient consulted Dr. Sadowski who suspected nasopharyngeal trouble and sent her to me. She had had trifacial neuralgia for a year before the growth attained sufficient size to occlude one posterior naris.

Inspection of the fauces will show nothing early, later a bulging downward and forward of the velum. Anterior rhinoscopy might show at least the presence of a growth of some kind if the nasal passages were unobstructed and the soft tissues contracted with cocaine and adrenalin. Posterior rhinoscopy would reveal a warty ulcerating mass in the later stages; early it is altogether possible that a hasty routine examination might yield a diagnosis of adenoids. Indeed, it seems to the writer, from observation of his patient, that there might have been a stage where nothing but the microscope could have demonstrated that there was anything more than adenoid hypertrophy.

As to *touch*, one text-book refers to the "hard warty feel so characteristic of this form of cancer." Prior to seeing this I had written that "it would be impossible for a surgeon who had once experienced the soft mushy

sensation of burying his finger to the bone in an ulcerating epithelioma of the nasopharynx to mistake it for anything else excluding tuberculosis and syphilis," but both myself and the author referred to each evidently had a certain stage of a single case in mind. In my case the sensation was like a mass of fresh blood clots, though the enlarged Eustachian eminence was hard. Case 13 is described as "very soft" to the touch. Doubtless the density varies so greatly that touch will serve little beyond determining a broad-surfaced, broad-based, undefined growth bleeding freely from the fingering.

DIAGNOSIS.

The text-books describe the chief characteristics of carcinoma of the nasopharynx as sessile tumors causing nasal stenosis, dyspnea, epistaxis, coryza, postnasal discharge of bloody, fetid, ichorous secretion, enlargement of cervical lymphatic glands, ear-ache, deafness and cachexia—occurring in a patient over 30 years of age. Doubtless at some time or other most of these symptoms appear, but they are of little use for early diagnosis. Only rhinoscopy long before the appearance of any symptom of malignant neoplasm will make the early diagnosis which is the desideratum in all cancers. This early diagnosis is only likely to happen in a patient coming for some other condition. In this stage, before the infiltration becomes a distinct neoplasm diagnosis is difficult if not impossible. Petor is not always present in carcinoma (usually not prior to ulceration), is present always in ulcerating gummata, frequently in tuberculosis, always in sarcomata and ulcerating fibro-



Case of Miss J. P.

mata. Pain is not an aid to a differential diagnosis, as shown by our table. Glandular involvement being present in 93 per cent. of the cases, its absence would exclude carcinoma almost positively, if we could be sure there were no involvement of the deep glands. Its presence is not to be relied on to exclude sarcoma, nor is any other symptom. It would be misleading to follow the text-books and exclude carcinoma if the patient were under 30, for 14 per cent. of the cases occurred before that age. Then we should always remember Rehn's case of laryngeal carcinoma at 3 years of age. Theoretically, it should be possible in the nasopharynx at the same age. Touch will determine a fibroma to have a narrow base in proportion to its size, with a smooth, rounded projection toward the oropharynx, its fixedness, firm consistence and sharp definition resembling and usually exceeding those of the Eustachian eminence, which we all so readily distinguish in adenectomy. Usually a fibroma attains a large size and produces mechanical difficulties before affecting the general health or producing much pain, whereas our table shows obstructive dysphagia present in only 2 cases—14 per cent.—and in these it was a very late symptom, appearing long after cachexia became marked. In 2 cases cachexia appeared before the growth attained sufficient bulk to produce even nasal stenosis. Fibroma is rare after 30, when it is apt to retrogress, or at least cease to progress. Both fibroma and sarcoma of the nasopharynx are usually accompanied by much more hemorrhage and bloody discharge than the records show

in carcinoma. In the early stages, carcinoma may simulate adenoids, as in Case 11, or both conditions may exist, as in the writer's case—No. 14.

Syphilis as an ulcer or a gumma can be excluded with certainty only by the failure of specific treatment to benefit. In the writer's case of carcinoma the pain was very much increased by potassium iodid, diminishing when discontinued, increasing again when resumed. This does not seem strange when it is remembered how some patients complain of aching in the parotids and at the angles of the lower jaws, and how others are affected with coryza, from iodism.

Pharyngo-mycosis rarely extends to the nasopharynx, but its appearance and history ought to render its recognition easy without the microscope.

The writer has not seen a report of a case of lupus—as distinct from tuberculosis—of the nasopharynx, though as it occurs in the oropharynx and nasal passages it would seem a possibility. The history, cicatrices, and associated skin lesion of lupus vulgaris should distinguish it.

Tuberculosis might simulate an ulcerating carcinoma, but it would not be fungoid and warty, and with its temperature record, thick, tenacious, bacillus-laden secretion, pulmonary and laryngeal accompaniment, does not seem difficult of exclusion. However, a hair-splitting clinical diagnosis is not worth while, for the microscope is the "final arbiter"; but the microscopist's negative report must not be acted on unless a large specimen has been submitted to him. When a clinical diagnosis of carcinoma has been made it would seem best to anesthetize, make a thorough digital examination and remove all of the growth that can be readily removed. This will permit of a microscopic examination of value even if negative. If it prove carcinoma, the best possible has been done; if otherwise, a more radical operation may be done if deemed advisable.

PROGNOSIS.

Termination is utterly hopeless with present methods of treatment. As to duration, from two to six years may be promised under palliative treatment. Radical operation, if survived, will shorten life to a few months, though one patient survived a year. The progress of the disease in the published cases seems quite slow in the early stages, rapid in the later.

TREATMENT.

This may be classed under two heads, radical and palliative. Special surgeons favor palliative methods by natural channels, general surgeons favor radical operations with radical preliminary operations to create an artificial channel. The aim of the radical operator is to get the growth out; the palliative advocate, recognizing the hopelessness of thorough removal, aims at comfort. The palliative methods include the cold snare, cutting forceps, possibly the curette in very soft growths, electrolysis, the galvanocautery, lactic and nitric acids, and possibly some other caustics, local soothing applications, and Chian turpentine internally. Extirpation of the enlarged lymphatics should probably also be included here. The 14 cases afford us examples of only the snare, forceps, curette, galvanocautery, glandular extirpation, Chian turpentine and absolute alcohol injections.

Radical procedures, of which there are many, vary considerably in technique, but they all contemplate the creation of an artificial channel by the resection, temporary or permanent, of more or less of the inferior or

superior maxillary and palatine bones. Three cases are reported as radically operated on. Case 2 lived a year, by which time repullulation had filled the space left by the exsection of the superior maxilla. Case 3 survived exsection of both superior maxillæ a few weeks. Case 8 survived an Annandale operation two months. There are no records of deaths on the table from preliminary operations for nasopharyngeal carcinoma, as there are for fibroma in the same location, probably because of the rarity of the disease and consequent fewness of the operations. There may be cases in which radical preliminary operations are necessary for the removal of fibromata, but malignant disease confronts us with a somewhat different problem. There is no hope here of retrograde metamorphosis during the third decade. It is not a question of limiting the bulk within harmless bounds. Since no one has yet reported a cure by radical operation there seems to be no basis for argument. It can not increase comfort to add postoperative anemia to cancerous cachexia. There is the laudable ambition to eradicate the disease so thoroughly that there will be no return, but the results with carcinoma more accessibly located, are not such as to warrant the procedure, and, furthermore, in the writer's opinion, thoroughness is not as attainable at the bottom of a deep artificial channel, necessarily different in every case, as through the old familiar natural passages where every remaining landmark is familiar from manipulation of thousands of cases and every variation from the normal is apparent to the rhinologist's touch, and where combating hemorrhage does not take up so much valuable time.

Contrast these radical operations, with their mutilation, disfigurement and early death, to the example of palliative treatment shown by Case 6, where Bosworth, by gentle manipulation of the cold snare, removed the bulk of the growth, followed by quiescence and comparative comfort. True, this was one of the cases in which there was little pain, but radical operations, followed in a few weeks by recurrence of the growth, can not offer any hope of controlling pain if present. In Case 4, McBride prescribed Chian turpentine, which he considers his duty in all cases of cancer, though he has seen no marked results and the effect in this case is not recorded. In Case 11, the removal by the snare of what were at the time thought to be adenoids notwithstanding the age of the patient—40—gave complete relief for 3½ years, when the sudden onset of deafness and very loud tinnitus marked the attainment of a large-sized recurrence, on which injections of absolute alcohol had no appreciable effect. In the writer's case—No. 14—removal of the growth with the cold snare, forceps and very gentle curetting was followed by a month of little or no pain and a period of quiescence. In the second month periodical attacks of pain commenced and were easily controlled by morphin. At the present time—three months after the operation—the patient goes about the house, and is happy and cheerful in the belief that the growth will not return. About one grain of morphin sulphate at bedtime controls the pain, rarely any being needed during the day. The addition of 1/100 grain of atropin sulphate seems to prevent nausea from the morphin. The only local application that seems to increase comfort and not to irritate is that suggested by Kyle for carcinoma of the nasal passages—aristol, 20 grains to the ounce of zinc stearate. Iodoform is disagreeable, and used in the nasopharynx daily for months, might cause toxic symptoms. Detergent and antiseptic gargles

are used to clear the oropharynx of secretion, but their use in the nasopharynx by way of either nose or mouth seemed to irritate in this case. None of the cases were treated by electrolysis, but in Case 13 Roncalli used galvanic ignipuncture under the preliminary diagnosis of angioma or fibro-angioma, and thinks he did harm; hastening the fatal result, though the part of the growth treated, diminished, while the untreated portion increased in bulk. In Case 10 extirpation of the enlarged lymphatic glands seemed to add comfort for a time. In Case 11 extirpation of the glands afforded relief from headache. As to whether the extirpation in these two cases lengthened or shortened life, we have no basis for an opinion. But if there is a chance of making the patient more comfortable there seems to be no contra-indication, as the healing was prompt and no ill result seems to have followed. In Case 6 the glands sloughed out and healed over, followed by rapid increase in cachexia. Dawbarn's method of ligation of the external carotids and a number of their branches has never been tried for the starvation of carcinoma of the nasopharynx.

CONCLUSIONS.

In conclusion, the points that I should like to hear discussed by this able assemblage are these: 1. Why is carcinoma of the nasopharynx relatively so rare? 2. Has the relative infrequency of carcinoma of the nasopharynx any bearing on the subject of irritation in the etiology of cancer? 3. Is a radical operation ever justifiable in undoubted carcinoma of the nasopharynx? 4. If justifiable in the very early stages, at what stage does a radical operation become unjustifiable? 5. If a radical operation be unjustifiable, what can we do to make the termination euthanasia, not cacothanasia?

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DETERMINATION OF THE MOTOR ACTIVITY OF THE STOMACH.—Schuell describes in *Fortschritte der Med.*, No. 18, an accurate method of determining the status of the gastric motor functions. After a test meal the stomach is rinsed out in three hours. The contents are filtered, the filtrate dried and then weighed. It weighs about five grams in normal conditions, and variations in this weight indicate different pathologic conditions.

CASE OF NASAL SARCOMA, WITH REMARKS.*

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Sarcomata within the last few years has certainly seemed to be on the increase. This may be due to the fact of a closer microscopic examination being made than formerly of all suspected tumors, especially those occurring in the nasal passages. Nor can rhinologists be too diligent in this direction. It is not my intention to go into the pathology of the sarcoma, but simply to add a few personal experiences to the report of a case.

Warren, in his late book on "Surgical Pathology," states "that sarcoma of the nasal passages is not a very rare disease." Bosworth has collected 41 published cases, but I believe this number is but a small proportion of the cases which have occurred. If statistics were really obtainable, they would show a much larger percentage of these growths than is at present the case.

The round-cell and alveolar forms of sarcoma seem to be the prevailing types of the growth occurring in the nasal passages, although there are sometimes seen the fibrosarcoma, myxosarcoma, and even angiosarcoma and melanosarcoma. Some writers hold that it is extremely rare for a sarcoma to originate primarily in the nasal passages, but that such a one nearly always has its origin in one of the continuous cavities, especially the maxillary antrum. This is a difficult question to decide, since the rhinologist rarely sees a case and follows it from its very incipency. Warren says that the tumors are pediculated with about equal frequency on the outer and inner wall of the nasal passages. Histories of reported cases do not seem to substantiate this statement, rather showing a greater frequency on and around the turbinates than at any other point. The average age at which the disease appears is about 40 years, and it is seen about equally between males and females. Warren further says, that sarcoma does not appear to show the same malignant tendencies in the nasal passages that it does in other localities. There have been several cases reported where the disease had not shown a recurrence several months after its removal.

ETIOLOGY.

The etiology of sarcoma appears as yet to be enveloped in obscurity, but the majority of pathologists incline to the theory of Cohnheim, that it depends on a disturbance of embryonic tissue. Nasse says that trauma is more frequently the cause of sarcoma than any other tumor, and observation teaches that there is certainly a close relationship between the two, especially in this class of tumors occurring in the nose. In my own mind I firmly believe that there is a possibility of benign growth in the nasal passages, such as the myxomata, being transformed into malignancy through traumatic irritation. Such a statement is difficult to verify, since I have been unable to find any authentic case which has been traced from its very incipency to the point where it has become malignant. There is enough evidence to show that this possible transformation has been seriously considered by others.

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