The Pathology and Treatment of Intra-Nasal Sclerosis.

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THE PATHOLOGY AND TREATMENT OF INTRA-NASAL SCLEROSIS.

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The pathogenesis of advanced nasal catarrh has received but little attention from pathologists, and the descriptions of the conditions present are of the crudest character in all the general text-books. Works on rhinology are but little more satisfactory, and to the recent writings of Bosworth, of New York; Mackenzie, of Baltimore; and Seiler, of Philadelphia, we owe by far the greater part of our knowledge of the subject. Detailed accounts of the treatment of this stage of nasal inflammation and of its results are scarcely to be found.

Leaving, therefore, the simpler phenomena of rhinitis simplex, I will pass to the consideration of true rhinitis hypertrophia. This disease is readily divided into two stages (J. W. Mackenzie): *a*, dilatation with hypertrophy; *b*, complete hypertrophy—or, as I much prefer to call it, *sclerotic rhinitis*. The appearances, on inspection of the latter stage, are most characteristic; anteriorly the lumens of the nares are found to be of fairly normal diameter, rarely is there much stenosis; the turbinated bodies, particularly the lower, are usually of light color, pink, grayish, or yellowish; their surface is very irregular and bossellated; and, on pressure with a probe, their hard glassy look is found to be due to a dense elastic consistence. Enchondroses of the nasal septum are of very frequent occurrence, especially at the extreme anterior lower border of the cartilage, or a long, sometimes blade-like, ridge may extend the length of the septum narium. Frequently the turbinated body will be found to be markedly grooved by a corresponding ridge projecting from the cartilage, although a considerable interval of clear space may intervene at the time of examination; showing, conclusively, that during the first stage of the hypertrophic process, and during the preceding stage of rhinitis simplex (*i. e.*, vasomotor paresis), the turbinated body pressed against the nasal septum. The history of very troublesome stenosis at some previous date can nearly always be elicited in the case of intelligent patients.

The middle turbinated body is greatly enlarged at its anterior ex-

tremity in many cases; it is commonly compact and fibrous in consistence, and may be so large and hard as to be firmly jammed in the nasal lumen. In advanced cases these nasal fibromas of the middle turbinated frequently undergo myxomatous degeneration—forming *myxofibroma* of Ziegler—and are then soft and gelatinous, giving the appearance of a sessile polypus. In other cases the middle scroll is extensively atrophied, and has a thin, pinched, blade-like appearance.

Posteriorly, as shown by the rhinoscope, the general mucous membrane has undergone thickening and fibroid change; the membrane is very light pink or yellowish in color; hard and dense in appearance and on testing with the laryngeal probe. The lips of the Eustachian tubes may be entirely yellow, and quite hard from fibroid change. These are usually sessile, or more rarely pedunculated posterior hypertrophies; small, usually much corrugated masses jutting from the floor of the nose, from the extremity of the lower turbinated body, or least usually from the bony septum. They are white or yellow, and firm and elastic in consistence, and are oftenest somewhat symmetrically distributed.

Following the almost universal rule of intra-nasal inflammations the upper and lower pharynx present marked and advanced changes. The glands forming the much talked-of, but slightly vaguely defined, *pharyngeal tonsil*, are atrophied, and those which have not undergone sclerosis are swollen and intensely irritated, and secrete mucus abnormal in both quality and quantity. In advanced cases the size of the pharyngeal vault is notably increased by atrophic changes.

The lower pharynx shows decided atrophy, the changes having been already described by me in a previous paper;[1] the larynx, as there mentioned, is, in my experience, always involved, and the bronchi are not infrequently implicated.

The *pathology* of sclerotic rhinitis may now be said to be perfectly understood, the studies here detailed seeming to bridge over the remaining gaps in our knowledge. As an inevitable result of long-standing rhinitis, we find the mucous membrane, the submucous, and cavernous connective tissue, all densely infiltrated with numerous leucocytes, which infiltration, following the universal law of chronic inflammations, becomes "organized" into new connective tissue. By the contraction and pressure of the new growth, and other processes detailed below, the vascular sinuses are gradually obliterated, so that they are found only subjacent to the periosteum or perichondrium (Seiler). There are four modes of obliteration of the "erectile sinuses" in sclerotic catarrh (Mackenzie): 1. Hypertrophy—new formation—of the connective tissue, and contraction of the same, above described. 2. "By

[1] The Medical News, October 22, 1887.

obliteration of their lumen by masses of round cells," and organization of the same. 3. By the formation of buds on the sinus walls, first noticed by Councilman. 4. By the formation of thrombi in some cases. The first two processes are those common to any chronic inflammation. The formation of these "buds" or septa is of great pathological importance; in some sections half the sinuses will contain "buds" of fibrous tissue, more or less completely blocking up their lumen. Their growth is due to the puckering of the sinus walls from the general contraction, plus the persistent irritation and hypertrophy of fibroid tissue which are present. The formation of parietal thrombi, discovered by Mackenzie, of Baltimore, is what might be expected from the active bloodvessel changes which are taking place. They are probably common in those exceedingly rapid cases of nasal catarrh in which the grade of chronic inflammation is of an acute type.

It will at once be seen that these phenomena can bring about but one result, the conversion of the affected turbinated tissue into a fibrous mass. Tissues, other than the vascular sinuses, are synchronously affected. The pressure exercised by the new growth induces atrophic changes in the glandular structures, which are finally destroyed; the ordinary nutrient bloodvessels are also constricted, and the vicious circle of changes goes on until, in extreme cases, the lower turbinated body may be represented by a mass of mere scar tissue.

Early in the pathological history of sclerotic rhinitis, changes in the epithelial layer take place, shedding and proliferation, and later in the process the formation of hypertrophic *papillæ*. This morbid phenomenon I have never seen noticed by any previous writer. It will frequently be observed, when examining cases of long-standing rhinitis, that the mucous membrane covering the scroll-like bodies has a coarsely velvety, or very minutely bossellated contour; this appearance is due to the growth of *papillæ* from the mucous membrane; multiple "papillomata" of very minute size springing from the surface of the turbinated tissue. The structure of these projections is precisely that of the so-called typical *papillomata;* they are made up of vascular connective tissue capped by layers of epithelium, the bloodvessels being frequently numerous, and forming vascular loops. These minute papillomata may undergo atrophy, the surface of the turbinated body becoming smooth and glassy, or they may persist indefinitely. Clinically, their importance is doubtless considerable, as they must add to the always present septic condition by entangling morbid products and increasing the difficulty of clearing the nose either by blowing or by medical means.

The pathological changes in the pharyngeal vault are similar to those found in the scroll-like bodies, and may be briefly described as gradual glandular and vascular atrophy from the pressure exercised by the new formed connective tissue.

The *causes* of sclerotic rhinitis cannot be given in the present state of our knowledge; the long catalogue of etiological factors, given in many memoirs and text-books, must appear to any analytical mind illogical and untenable. Early stages of nasal catarrh are dependent in part on climatic, in part on anatomical and developmental, and largely on factors as yet indefinable, which are part of our civilized life. The fads of rhinologists, when weighed from the standpoint of the comparative pathologist and cautious scientist, will be found to be but sieves. The very popular one of unphysiological clothing need only be mentioned; surely no unprejudiced man of science will deny that clothing is now as well adapted to the needs of the human organism as at any time in four hundred years; yet nasal diseases are increasing in frequency yearly on our Atlantic seaboard. Also in many European States, where the dress does not in any way differ from that worn in the United States, chronic catarrh is rather a rare disease. It need only be added that nasal inflammation is much more common in men than in women, and is rather rare among actresses and opera singers.

Why a certain, fortunately small, proportion of cases of chronic rhinitis run on to typical sclerotic catarrh, and the larger portion remain *in statu quo* until old age comes to sap the vitality, cannot be stated; *a low bloodvessel vitality* seems to be the immediate cause. Intra-nasal "sclerosis" differs from "atrophy" only in the rapidity and extent of tissue implicated. The two diseases have, however, very marked differential points, and call for somewhat different treatment.[1]

The *symptoms* of sclerotic rhinitis are many, frequently serious, but far from distinctive; rarely is there either hypersecretion or nasal stenosis, though the first may be found in cases in which myxomatous changes have taken place, and large septal enchondroses may cause the latter. Dribbling of thick, tenacious mucus from the posterior nares—from the diseased pharyngeal tonsil—is common, and is often most bitterly complained of. Frontal headache, from congestion of the frontal sinuses, and irregular and frequently severe head pains from implications of other bony sinuses, are frequently the cause of patients presenting themselves for treatment. The sense of smell is blunted, and taste is, consequently, frequently much impaired.

The chronic pharyngitis and laryngeal implication always present give the symptoms already detailed in a previous paper.

The laryngitis, tracheitis, and even chronic bronchitis, so frequently found in advanced cases of this disease, are directly symptomatic of the nasal lesions. As Bosworth has so well shown, the turbinated bodies are almost the sole source of the moisture needed to saturate the inspired air (about 5000 grains of water in twenty-four hours). When from

[1] See The Medical News, April 2, 1887.

sclerotic disease the "erectile tissue" is unable to throw out the proper amount of moisture, the inspired air reaches the bronchi in a dry and unprepared condition, with the result of irritation of the mucous membrane of the lower respiratory tract, and the lighting up of other grave forms of disease.

Of remote symptoms, languor, nervous irritability, and a variously described feeling of abnormality "in the head," are the commonest. Asthma, or at least violent panting after slight exertion, is frequently complained of. Patients in whom the scroll-like bodies are represented by mere scar tissue have invariably, in my experience, been much below par, complaining of various neurasthenic indications, general ill health, and a great variety of symptoms—whether *post hoc* or *propter hoc* no claim will be made in the present paper, but the fact is a certainty. The conjunctivæ are usually injected, and when referred to an oculist gross eye changes are generally reported present—the relation of the two diseases is a question for the ophthalmologist.

The Eustachian tubes and middle ears are always involved in prolonged cases of this disease; impairment of hearing, tinnitus aurium, aural vertigo, and what may be called ear malaise, are very frequently complained of, and aural sclerosis, with extreme deafness, is one of the results of this disease in some cases. The glossal papillæ are enlarged and diseased, and dyspepsia is a most common concomitant. Mental symptoms have been noted by many observers: my experience has led me to believe them always dependent on the secondary ear lesions; where deafness and tinnitus have not appeared the mind will be uninfluenced. Lastly, sleep disturbances and insomnia, whatever relation they may bear to the nasal lesions, are of the commonest occurrence in this disease.

The special *treatment* of this form of intra-nasal inflammation has been greatly neglected; many writers claim to have *cured* this condition. I am aware that some gentlemen have also "cured" hepatic sclerosis and gastric carcinoma. But to my mind the reproduction of so highly organized a tissue as that of the nasal turbinated bodies, when totally destroyed by fibroid changes, seems a miracle worthy of Buddhist adepts, and totally impossible to accomplish by any means the technique of which has been described in less occult lore.

Although a cure of sclerotic rhinitis is a result impossible for the average rhinologist to obtain, yet a great deal can be done by careful and prolonged treatment, even in the worst cases. Comparative comfort may be secured, the disease practically arrested, and the remote results held off for an indefinite time.

The treatment may be divided into medical and surgical measures The use of "alteratives" in spray is of great value; the sulpho-carbolate and the iodide of zinc; solutions of thymol or of "Listerine;" and Boul-

ton's solution have proved the most valuable in my hands; they must be applied with skilful and thorough technique, at first daily, and toward the end of the four, ten, or fourteen months of treatment, once a fortnight. The careless, awkward douching of the nasal cavities, by means of a "perfume atomizer," so often witnessed, is totally without value, not infrequently hurtful, and quite unworthy the scientific technologist.

The action for good of these and similar medicines in this stage of nasal catarrh is partially due to their antiseptic and mechanical, as well as to their stimulant properties. Their first action, if properly used, is to cleanse mechanically and render antiseptic the nasal chambers; secondarily, the bloodvessels are so affected that the local blood supply is increased, the whole tone of the turbinated bodies being thereby improved. The mucous glands are also stimulated to throw off the proliferated cells and abnormal mucus which clogs them, and the condition of the nasal cavities becomes for a longer or shorter period more nearly normal. More energetic stimulation is frequently called for; Seiler's iodine solutions, and tincture of myrrh diluted with glycerine to suit the individual case, are perhaps the most valuable; both are to be applied with the cotton tuft and carrier under full illumination and inspection. Mechanical stimulation, by means of cautious *curetting* of the papillomatous turbinated mucous membrane, especially of the post-nasal region, is of undoubted value. For some eighteen months I have used it as a routine measure with decided benefit. I can find no mention of its use in rhinological literature.

The faradic current applied with the positive pole in contact—by means of a suitable electrode—with the diseased turbinated body, is a very useful "alterative." Its use calls for the most thorough care and judgment; the weakest secondary current obtainable from the ordinary office battery, as usually used, is frequently too powerful, irritating, and injurious; a rheostat may be required, or the current may be regulated by only partially immersing the zinc element.

Operative surgical treatment is very rarely called for in nasal sclerosis. If the middle scroll be enlarged and jammed, as previously described, pressure must be relieved by cautious destruction of the superabundant tissue, by chromic acid (which I usually prefer), with the galvano-cautery knife, or with the Jarvis snare. Care should be taken to remove no more than is necessary to relieve pressure, the tendency of this disease progressively to destroy turbinated tissue being never lost sight of. Myxomatous degeneration of the middle turbinated calls for special measures; chemical or galvano-cautery is inadmissible, as they must be used so vigorously that a dense, contracting scar results, which is anything but favorable to the course of the disease. The snare can seldom be satisfactorily used, owing to the position and sessile, elastic,

and slippery nature of the growth. The writer's, or some similar cutting forceps, is the best means of reducing the growth, small pieces being gnawed off until all myxomatous tissue is removed. It is my habit to treat the stump with a strong glycerite of iodine.

Enchondrosis of the septum narium may incidentally require removal, for the technique of which the reader is referred to the classical paper of Seiler; they bear no direct relation to nasal sclerosis. Nasal polypi may be found, and call for operation by recognized methods. The region of the pharyngeal tonsil will call for appropriate treatment, which need seldom, if ever, be operative, the post-nasal atomizer and applicator being usually sufficient to control the symptoms. Various dilutions of fluid extract of eucalyptus, applied by the post-nasal applicator, have given the writer great satisfaction in controlling the constant dribbling from the diseased glands, plus the routine treatment already outlined. The pharynx, larynx, and bronchi will require sedative therapeutics.

The constitutional treatment is, of course, of great importance; medicinal tonics are frequently valuable, but good hygiene with scientifically regulated outdoor exercise is of more importance. Where the patient is able to reap the benefits of climate change, the less elevated regions of the Adirondacks, the Maine woods, and similar "spruce areas," are recommended for the summer; and the highlands of the Carolinas, or, better, the plateau of Mexico, about Orizaba, are advised for the winter season.

By no method known to me, or described in medical literature, can any rhinologist hope to keep his patient permanently free from symptoms by any one course of treatment in the climate of our Atlantic States. Cases must be seen at intervals—certainly as soon as warned by any return of the old symptoms—if they are to continue comfortable. My own practice is to treat cases of nasal sclerosis, for a period varying from four or five weeks, to twice as many months, until all important symptoms subside, and then instruct them to return at least once a month, or to report immediately if they suffer from symptoms of a "cold;" attacks of acute coryza, if allowed to run their course, having a most injurious effect on the course of the nasal disease. Of course, but a limited number of patients can be induced to follow so laborious a course of treatment, but the physician cannot conscientiously offer any better alternative. Nor can the victim of advanced intra-nasal sclerosis look forward, without treatment, in our climate, to a more favorable issue than impaired hearing, injured voice, bronchial disease, and much vitiated general health.

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