

Some Points

IN THE DIAGNOSIS OF

HEADACHES

AND OTHER NERVOUS MANIFESTATIONS OF NASAL ORIGIN.

An Address delivered to the Salisbury Branch Meeting of the British Medical Association.

By P. WATSON-WILLIAMS, M.D. LOND.,

PRESIDENT OF THE BATH AND BRISTOL BRANCH; LECTURER ON OTOTOLOGY, RHINOLOGY, AND LARYNGOLOGY AT THE UNIVERSITY OF BRISTOL; CONSULTING SURGEON FOR DISEASES OF THE EAR, NOSE, AND THROAT, BRISTOL ROYAL INFIRMARY.

IN submitting for consideration the nervous symptoms of nasal origin, I have singled out and placed first the symptom of headache, because it is the dominant symptom in many nasal affections, and now very generally recognised as being sometimes attributable to the nose, sometimes to ocular defects, or to the teeth. We realise that while headache is often a symptom of cardio-vascular affections, blood dyscrasias—e.g., in renal disease and other general systemic abnormalities—it is in others a symptom of peripheral origin, and to this latter group belong the ocular, dental, and most nasal headaches. Let us therefore consider, first, the diagnosis of nasal headaches before passing to the more alluring subject of "other nervous phenomena of nasal origin."

NASAL HEADACHES.

The simplest cases of peripheral nasal headache are those due to pressure of the middle turbinal body on the septum nasi. Usually there is a deflected septum and then the middle turbinal body, when turgid or congested, becomes crowded against the corresponding part of the septum, causing a feeling of tightness in the nose and headache, usually supra-orbital, prone to arise when the head is low—e.g., in stooping or in bed—or when the nasal mucosa is irritated by dust or pollen, and therefore intermittent. Such headaches are temporarily relieved by spraying with weak cocaine or adrenalin solution, and may be cured by removal of the anterior third of the offending turbinate. Yet in few cases is the question so simply answered, for when we inquire as to the reason of this periodic swelling of the turbinate, it is very often found that the basic cause of the trouble is a sinusitis, and that it is the consequent turgescence of the whole nasal mucosa, super-added to a much longer standing narrowing of the nasal passages by the septal deflection, which causes the troublesome headache and blockage of the nose. In such cases it may be a simple matter to remove the nasal obstruction; but to leave the infective sinusitis and be content with overcoming obstruction by evisceration is treating a symptom rather than a disease. As I shall explain below, the headache may be the most obvious, but by far the less serious of the symptoms. Again, the peripheral source of headache may lie, not in the nasal passages, but in the nasal sinuses which open into the nasal passages. The sensory innervation of the accessory sinuses is derived from various branches of the fifth nerve and irritation from inflammation of the lining mucosa, or, in acute cases especially, pressure on the inflamed muco-periosteum by the accumulating pus causes severe and sometimes agonising neuralgic pain. The pain is very often referred to regions by no means corresponding to the offending sinus; thus, the headache of maxillary antral sinusitis is usually occipital, the headache of ethmoidal or sphenoidal sinusitis is supra-orbital or temporal at the back of the eyes, or is referred to the middle ear or mastoid area. A frontal sinusitis is usually associated with weight or pain over the sinus; pain in this area may likewise be due to a sphenoidal sinus, or an enlarged turbinate. But severe pains at the back of the eye or deep in the ear, when due to

sphenoidal sinusitis, are very often mistaken respectively for ocular or aural disease. I have met with cases where this pain was so severe, and so definitely located deep in the ear, as to be mistaken for acute mastoiditis. Ocular headaches, usually due to uncorrected errors of refraction, are cured by wearing suitable glasses. But with a chronic nasal sinus infection, toxic absorption may induce a laziness of the intra-ocular musculature, so that a relatively slight degree of refractive error, which would be well compensated in health, becomes a source of headache. Hence even headaches that are relieved by glasses may really be due to a nasal affection.

I have spoken of the localisation of neuralgia or other types of headache due to the local irritation of the sensory nerves filaments of the various sinuses, such localisation being mostly encountered in the acute and subacute attacks of sinusitis. But equally important is the more diffuse headache or sense of intense heaviness in the forehead or vertex, due to the toxic absorption from the infected sinus or sinuses. In most chronic cases these diffuse headaches occur daily, while the localised pain is often periodic and corresponding to exacerbations of the sinus infection, either from the exit of the discharge becoming blocked till the pressure of the increasing collection of muco-pus at length forces a passage and re-establishes a measure of drainage; or else it is due to climatic or general conditions, tending to increase the vitality and virulence of the infection—e.g., a chill, damp, sunless weather, or diminished resistance by the patient host.

PUS IN DISCHARGE IS NO CRITERION OF VIRULENCE OF INFECTION.

Let us now consider an aspect of nasal sinus infection which I feel is of very grave import in relation to general medicine. Headache, due to sinusitis, is most marked in the relatively acute or active sinus inflammations, in cases where the resulting mucopurulent discharge is most in evidence—that is to say, where polynuclear pus corpuscles are superabundant. But the more lavish the outpouring of pus corpuscles, the more active are the processes of inhibition or phagocytosis of the infecting organisms, and hence the less the toxic absorption. Conversely, given an infection of the nasal sinuses with but relatively weak inflammatory reaction and with a paucity of polynuclears, headache is less a dominating symptom, but the toxic absorption becomes more active, till we arrive at a large group of nasal sinusitis cases with but little purulent discharge to arrest attention, and no marked or localising headache to excite suspicion. If my contention is sound we see that so far from taking the amount of pus in a nasal discharge as the criterion of its virulence, the opposite rather holds true that, given an infection, the more the pus the less the toxic effect.

MENTAL SYMPTOMS OF SINUS INFECTIONS.

Let us apply the lesson to latent nasal sinus infection; far more important than the nasal catarrh, which is an inconvenience, is the toxæmia and consequent ill-health. The toxic absorption from nasal sinuses, which are closely related anatomically to the frontal cerebral lobes and the base of the brain as are the frontal sinuses, ethmoidal cells, and sphenoidal sinuses, seems to cause headaches by local absorption through the lymph-vascular communications with the cranial cavity, and the severe headaches are probably due to irritation of the meningeal branches of the fifth nerve. The most constant and characteristic mental symptoms of such sinus infections are periodic mental depression, inability to concentrate, and hence loss of memory for events of daily life; difficulty in reading, and in taking in what is read—to such an extent that the patient will find he has read a page or two of a book and not taken it in—inability to initiate conversation or even to write a letter are also found; so that patients feel so stupid that they avoid meeting strangers and even friends, as they "can't think of anything to say"; they

become taciturn, moody, and fitful in temper. Take, for example, a latent sinus case in a girl of 18 or 20; the parents may say that she gets moods and is difficult, but is all right when she takes an interest in things and thinks less of herself. The explanation is that when toxic absorption is marked she cannot interest herself, and cannot be bright and happy and full of life. All sinus infections are prone to be more active at the time of menstruation, which fact accounts for increased symptoms corresponding to the period in such cases. If the poisoning be continuous the patient is permanently altered in character, and in her outlook on life; she becomes a neurasthenic. Again, a business man who has been quick, mentally alert, and able to initiate and control a large business under similar conditions becomes neurasthenic, loses his initiative, feels he has to let things slide, worries over trifles, and becomes depressed.

Quite a large proportion of neurasthenic patients are puzzling unless one seeks and finds some definite cause of toxic absorption accounting for altered character and mentality. Such neurasthenic phenomena may be due to mental strain—e.g., at the front, in business, or from home anxieties—but I believe that many of these would not succumb were it not that toxic absorption rendered them susceptible to adverse environment. We all realise that the gastro-intestinal tract, pyorrhoea, or a weak heart action—e.g., that following diphtheria—may be the source of trouble. While not failing to look for such possible causes, let us remember that in the nasal sinuses, once persistent infection is established, the pyogenic organisms find a happy home and breeding ground; these infected sinuses become perfect physiological culture-tubes, maintained at blood heat with a never-failing pabulum.

Nor do the mental aberrations stop at neurasthenic symptoms, and slight alterations in character and mental alacrity. The depression that is so constant a manifestation of sinus infection may be so dominating as to cause melancholia and suicidal impulses, or mental delusions. The subjective foul odour that is a common symptom of antral and other sinus suppurations is an annoyance to the sane, but is probably one of the causes of olfactory illusion that the alienist accepts as a symptom of insanity.

CONCLUSION.

How are we to diagnose and at least be led to suspect nasal infection as the cause of such symptoms? The existence of a persistent or recurrent purulent catarrh may be obvious or elicited by inquiry, but the non-purulent discharge is apt to be ignored by the patient, and must be sought for. The neurasthenic symptoms are usually worse in the morning on waking, or for the first hour of two after rising; they are often periodic, and better in warm dry weather, worse in cold and damp, and always aggravated by intercurrent colds. But the history of the case may reveal many facts which point to a source of recurrent infection; headache or heaviness, recurring sore-throats, muscular rheumatism, rheumatoid arthritis, gastro-intestinal catarrh, appendicitis, are so frequently associated with a chronic sinus infection that their interdependence is sometimes hardly open to doubt. Although these incidents in the patient's life may have occurred long previously, one must remember that a sinus infection may be of some years' standing, and a constant source of ill-health, without seriously arresting the patient's notice. Often enough the existence of a latent nasal catarrh can only be determined by direct inspection of the nasal passages anteriorly and posteriorly, and perhaps only by passing a fine cannula into the sinuses, and washing out or sucking the contents back into a sterile syringe, and submitting them to bacteriological examination and culture. In many cases the health or happiness of the individual is at stake, and in the absence of other causes no stone should be left unturned to determine the existence or otherwise of a sinus infection.

THE SCHICK TEST

FOR THE DETERMINATION OF SUSCEPTIBILITY TO DIPHTHERIA: A RECORD OF 1200 CASES.¹

By T. E. DICKINSON, M.D., CH.B. MANC., D.P.H.,
FIRST ASSISTANT MEDICAL OFFICER, MONSALL HOSPITAL,
MANCHESTER.

A STUDY of the tables and charts contained in the Metropolitan Asylums Board Report for 1919-20 would seem to indicate that there has been no decline in the incidence of diphtheria in London during the past 30 years. Reference to the annual report of the Chief Medical Officer to the Ministry of Health, 1919-20, p. 29, shows that the case rate for diphtheria per 1000 population, England and Wales, has remained stationary during the past decade. At present, however, there are indications that it may be possible to establish a system of active immunisation against diphtheria which, in time, will result in its final disappearance. Park and Zingher,³ of the city of New York Health Department, as the result of experiments extending over several years, conclude that immunity to diphtheria, possibly life-long, can be obtained by injecting subjects with small doses of diphtheria toxin-antitoxin mixture. From the researches of Schick¹ and others it has been known for some time that certain individuals possess natural immunity to diphtheria by virtue of an antitoxin circulating in their blood serum. To attempt to immunise the entire population by toxin-antitoxin injections obviously is impossible. But if some method could be found which would enable one to distinguish the naturally immune from the non-immune, so that only the latter group need be immunised; further, if it could be shown that more than half the population do possess natural immunity, and that the majority of the non-immune were children, who could be conveniently immunised in batches—then a distinct advance would have been made towards the realisation of immunisation upon a large scale. Such a method or test, a necessary step in the control of diphtheria, has been devised by Schick. He has found that the intracutaneous injection of a minute dose of diphtheria toxin is followed by a skin reaction if the person be not immune to diphtheria. If such person be immune, then there is no skin reaction; the antitoxin circulating in the blood serum of persons naturally immune neutralises the toxin injected into the skin, and nothing happens. If there is no antitoxin in the blood-serum the unneutralised toxin exerts an irritant action on the skin, producing the clinical sign known as the positive Schick reaction. This test is safe, for in my series of 1200 cases there was no single instance of sepsis, or untoward after-effect of any description; it is easy to perform; only a little practice being required to enable one to make intracutaneous injections with ease and facility. That the test is reliable I hope to demonstrate in the course of the paper. Results obtained in different series of tests will be found in papers indicated in the bibliography.

Method of Test and of Recording Results.

The toxin solution for the test was obtained from the Burroughs Wellcome Research Laboratories, London. It is sent out in sealed phials, each containing 1 c.cm. of diluted toxin. The dilution is 1 in 500 in 0.7 per cent. saline containing 0.5 per cent. phenol. It is made up fresh each week and tested each week on the skins of guinea-pigs. It is a ripened toxin, and standardised so that its minimum lethal dose (M.L.D.) is accurately known. The M.L.D. is that amount of toxin which, in four days, will kill a guinea-pig of 250 g. weight. The dilution is such that 0.2 c.cm. contains exactly one-fiftieth part of an M.L.D., and this is the amount used for one injection. The control injection was put up in similar sealed phials, marked to distinguish it from the toxin. The control is toxin heated to 75°C. for

¹ Abstract of a thesis submitted in May, 1921, for the degree of Doctor of Medicine at the Victoria University of Manchester.