

*On Graves' Disease with Insanity.\** By ALEXANDER ROBERTSON, M.D., F.F.P.S.G., Physician to the Town's Hospital and City Parochial Asylum, Glasgow.

Before narrating the case which is the basis of this communication, I shall briefly advert to the leading features, and the views held regarding the nature of the remarkable neurosis with whose discovery the name of the late eminent Dublin Professor, Dr. Graves, is most frequently associated. The dependence of the psychical and somatic phenomena on one cause, common to both, will thus be more clearly demonstrated, and the claim which it seems to me the disorder of the mind has to be regarded as a distinct form of insanity will be more apparent.

The three great symptoms by which Graves' disease is so thoroughly individualised are cardiac palpitation, enlargement of the thyroid gland, and marked prominence of the eyeballs. With regard to the first of these—namely, the disordered action of the heart—it has been asserted that there is always organic change in the substance of the organ. Certainly in a considerable number of the published cases cardiac hypertrophy was diagnosed, and in some this was accompanied by valvular disease. But, on the other hand, it is well ascertained that structural alterations are far from being constantly present; that they are by no means essential elements; and that, where they exist, the hypertrophy at least is either a result of persistent over-action, or that both it and the increased action are to be regarded as common effects of a more remote pathological cause in the nervous system.

It would appear that in some cases a real cardiac hypertrophy, giving rise to a marked increase in the area of dulness in the front of the chest, had been only of a temporary nature, analagous to what sometimes occurs in pregnancy, when the organ returns to its normal size after child-birth; or to the reversion of the uterus after delivery to nearly its original dimensions.

Whether or not there be any change in the substance of the organ, the symptom *palpitation* is the first, as a rule, to make its appearance, and attract the attention of the patient;

\* Read at a quarterly meeting of the Medico-Psychological Association, held in Glasgow on 21st May, 1874.

and it is also more uniformly present during the course of the disease than either of the other two leading phenomena.

As remarked by the late Professor Trousseau, the enlargement of the thyroid gland partakes largely of the nature of an erectile tumour or cirroid aneurism. Both trunks and branches of the thyroid arteries increase in size and become tortuous; the veins also dilate and stand out prominently on the surface. There does not appear to be any distinct hypertrophy of the gland-substance, though distension of the thyroid cells with gelatinous matter and, in some cases also, an increase in the amount of connective tissue have been noticed. The compressibility of the enlarged gland and its ready expansion, the pulsation in it, and the bellows murmur to be heard over the swelling, all indicate that the greater dimensions of the organ are referable chiefly to an abnormal development of its vascular system.

The third leading feature of the disease—the prominence of the eyeballs—is the one which most forcibly strikes the observer, professional or non-professional. The protrusion of the eyes is so great in some cases that the patient fears they will fall out of the orbit altogether; and Trousseau relates that this actually occurred in one of his cases, in which one eyeball fell out on the cheek, and was replaced by the fingers. Ordinarily both eyes are pretty equally affected, but this is not always so; for the one eye may project much more than the other, as in my patient in the advanced stage of his disorder.

There has been considerable diversity of opinion respecting the nature of the pathological changes within the orbits which give rise to this singular protrusion of the eyeballs. The view which has received greatest support from *post-mortem* examination is that, after the disease has been of considerable standing, the cellular tissue and fat at the back of the orbit become hypertrophied, and thrust the balls forward. As, however, often in the earlier stages, and sometimes also in the more advanced, the exophthalmos varies in degree, increasing when the other symptoms are more pronounced—in short, during a paroxysm—and diminishing during a general remission of the disorder, it is pretty clear that a portion of the enlargement is due to congestion of the blood-vessels.

Contrary to what perhaps might have been expected, the ophthalmoscope has yielded negative results in most cases; for the optic disc and retina were normal in aspect, except in one or two instances in which congestion and degenerative changes were noticed.

In addition to the three leading phenomena, a number of secondary ones are present in most cases. Thus, epistaxis is of not infrequent occurrence; menstruation in females is usually suppressed; and there is disorder of the stomach and bowels. The patient is generally anæmic, and emaciation is often very marked.

There is almost always a special psychological change pretty uniform in its character. There is much capriciousness and irritability of temper, along with a degree of depression amounting to despair sometimes. Delusions in harmony with this emotional state occasionally arise, and a disposition to violence is not infrequently manifested. The irritability usually differs to some extent, though not greatly, from the form which accompanies epilepsy. The latter is often blind, purposeless and instinctive in its manifestations. The former is less mechanical, and more under the control of the will. In a well-marked case in a young woman who was under my care about five years ago, the mental condition corresponded closely with the description I have just given, except that there were no delusions.

Many diverse views have been held with respect to the pathological condition which gives rise to these symptoms. As most of the patients are very anæmic, it has been thought that this state of the system is at the foundation of the disorder. But this explanation will not suffice; for the disease sometimes shows itself in persons who are in good condition, and whose blood is not impoverished. Thus, though the young woman to whom I have referred was decidedly anæmic, the male patient, whose case I record in this paper, was certainly not so.

The doctrine which locates the disease in the cervical and upper dorsal ganglia of the sympathetic system appears most fully of all those proposed to meet the requirements of the problem. For, first, the three leading symptoms very clearly point to some affection of the vaso-motor system of nerves; second, the mental disorder is also readily accounted for on the same hypothesis; and, third, cases are on record in which certain of these ganglia were found in a morbid condition on *post-mortem* examination.

I now proceed to the case which I wish specially to submit to the Society. Before the patient was admitted into the Parochial Asylum, he had been an inmate of the Glasgow Royal Infirmary on three different occasions. It was not, however, till after his death that I ascertained he had been

under the care of my friend Dr. Perry, one of the physicians to that institution, and that that gentleman had published an account of the case up to the close of the patient's last residence there, in a valuable communication on exophthalmic goitre, in the "Glasgow Medical Journal," for May, 1873.

I shall first briefly narrate the case as described by Dr. Perry, and then supplement his account by a statement of the additional or altered symptoms which were manifest when the patient was admitted into the asylum.

P. R., labourer, age 47, was admitted into the Glasgow Royal Infirmary in December, 1868, complaining of epigastric pain, and of a beating at his heart, or "purring," as he described it. This palpitation was not intermittent in its character, and was of the same intensity from day to day. The pulse in the right radial artery was considerably stronger than in the left, and preceded it in point of time, and a similar discrepancy was noticed in the carotids. The right pupil was much more dilated than the left, but was quite sensitive to light. The cardiac dulness was somewhat increased in extent, and at the base there was an additional area of dulness about two inches in breadth, extending upwards towards the top of the sternum. "Auscultation reveals at the heart's apex a clear, loud, and prolonged first sound, with a very faint and muffled second sound. At the base both sounds are faint, and much obscured by a constant rushing sound. When carefully listened to, this sound can be made out as a double murmur, which can also be traced in the course of the aorta over the dull area above the heart, before mentioned."

There was no enlargement of the thyroid gland, nor was there exophthalmos at this time, but on his readmission in 1869, after a few months' interval, these symptoms were well marked. They subsided under treatment, and he once more left the institution. His last admission was in April, 1873, and it is then noted that "his eyeballs are now very prominent, and look as if about to fall out of the orbits. The right and left lobes of the thyroid gland are each about the size of a turkey's egg, and pulsate violently. The isthmus is not so large in proportion. The heart's action is very rapid and tumultuous. All his symptoms become very much aggravated upon the slightest excitement, and sometimes without any apparent cause."

This, then, is the history up to April, 1873. The warrant for his confinement as a lunatic was granted on December 22nd, 1873. His wife stated to me on his admission at this date that his temper, which had been irritable since his trouble began, had become much worse latterly, and that for about a week before his removal to the asylum he had been quite unmanageable. His violence had been so great that his rela-

tives felt constrained to call in the assistance of the police for self-protection.

I found him to be a man of about middle height, neither florid nor pale in complexion, but rather disposed to the former hue, and much reduced in condition. His countenance had a most ferocious expression, no doubt partly due to the protruding eyeballs, but also largely the result of the maniacal excitement by which he was actuated. On my quietly asking his name, he answered in a loud tone, "What's your business?" jumped off his seat and seemed about to strike, but he suddenly restrained himself and sat down. This conduct he repeated several times on further questions, and no information could be obtained from him. No distinct delusions were disclosed, but his whole bearing indicated a morbid suspicion of those around him.

The right eyeball was obviously the more prominent of the two, and the conjunctiva of that eye was injected. The right side of the thyroid gland was the larger, and the superficial veins were also more distended on that side. There was marked palpitation accompanied by a heaving motion in the cardiac region; the pulse was about 120, weak, but regular.

On the evening of his admission he had a severe convulsive seizure, in which he was unconscious; and it was stated by the attendant not to have differed in character from an ordinary epileptic fit. Next day his wife said that he had never had a fit before, and it may be added here that he was not noticed to have any afterwards. After about a week the irritability and excitement subsided to a considerable extent. His general condition, however, became much worse. The stomach rejected almost all food. Severe chemosis of the right eye occurred, and ultimately the cornea sloughed entirely. Mentally he continued calmer, but was indisposed to converse, apparently through the severity of his illness. Prostration increased, and eventually death terminated his sufferings on the 11th January, sixteen days after admission. Much to my regret, his relatives refused to sanction a *post-mortem* examination.

In this case it can scarcely be doubted that the mental disorder was really a part of the general disease, as much so as the protruding eyeballs or hypertrophied thyroid gland. It seemed to differ only in degree from the lesser psychical perversion which, as we have seen, is so uniformly present, and existed in my patient himself in the preceding part of his illness. It was not merely a coincidence, that is, insanity accidentally supervening on the other phenomena. All the

symptoms, both mental and bodily, had apparently one cause, and that cause, as has been indicated, most probably was disease of the cervical sympathetic. The convulsive seizure, let me also say, had doubtless a similar origin. It showed that the morbid condition in the brain—one we would infer of hyperæmia—was not confined to the centres for mental action, but had extended to those for motion likewise.

I have said that the pathological condition of the brain, or, at least, of that part associated with mental action, is probably hyperæmia. At first sight, considering that most of the patients afflicted with Graves' disease are weakly and reduced in condition, an opposite condition might be supposed to exist in that organ. But when it is remembered that the blood-vessels of the thyroid gland, and those within the orbit have been *seen* dilated in *post-mortem* examinations of patients who laboured under the ordinary forms of the disease, it may reasonably be inferred that a like state exists within the skull when insanity supervenes. And this will appear the more probable, when it is remembered that gland, eyes, and brain have, there is good reason to think, the same regulating centres for their blood-vessels, namely, the sympathetic in the neck. Nor, on the other hand, is it at all unusual to meet with cases of hyperæmia of one or a limited number of organs in an anæmic state of the system.

Cases in which positive insanity arises are certainly not common, but they are by no means rare. Thus one, very similar to my own, is recorded by Dr. Morell Mackenzie, in the "Clinical Society's Transactions" for 1868, and another one, described by Professor Meynert, is quoted in the "Annales Médico-Psychologiques," for March last.

Granting then that the insanity in Graves' disease is a legitimate outcome of the pathological condition on which the other phenomena are dependent, are we not entitled to ask for it a special place in such a classification as that of the late Dr. Skae? His valuable system is especially based on etiology, though it is by no means restricted to it. In the form of disorder we have been considering, the causation is apparently well defined, the accompanying physical symptoms are also tolerably constant and uniform, and the features of the mental disorder itself bear a pretty close resemblance to each other in different cases. Thus, then, in respect of causation, and of symptoms relating to the body as well as to the mind, this form of insanity is distinctly specialized; as much so, at least, as the majority of those included in Dr. Skae's classification.