FUNCTIONAL SPASM OF ACCOMMODATION*†

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FUNCTIONAL spasm of accommodation was described by von Graefe (1856), and there are many case reports in the literature (Duke-Elder, 1949). The condition is sufficiently infrequent to retain a slightly bizarre flavour. The cases which occur sporadically in the out-patient departments of hospitals tend to be dismissed as relatively unimportant, and it is rare to be able to obtain an effective follow-up in hospital work. For this reason the material for this paper has been obtained from the records of a series of 12 private patients. One has been followed for 29 years, one for 14 years, one for 10 years, two for 5 years, one for 4 years, two for 3 years, two for 2 years, and two for 1 year or less.

Naturally, the condition is restricted to age groups in which the accommodation is active. In my series three patients were under 10 years of age, four between 10 and 20 years, two between 20 and 30 years, and the others 30, 32, and 33 years respectively at the time of their attacks. In one patient who has been followed from the age of 30 to 60, while the pseudo-myopia has disappeared with advancing age, symptoms strongly suggesting spasm of the ciliary muscles still recur.

For the purpose of this paper it has been possible to make a careful study of 21 attacks of accommodative spasm, as recurrences of the trouble have been frequent. Six patients have had one attack, three have had two attacks, and three have had three or more attacks.

There were eight females as against four males, though the more serious symptoms all occurred in males.

Clinical Findings

Refractive Errors.—Preliminary refractive tests were made without cycloplegics. Where spasm was suspected from the symptoms or from the variability of response, cycloplegics were employed before the diagnosis was definitely made. The children were tested under atropine cycloplegia, and most of the adolescents and adults for reasons of convenience under homatropine and cocaine. These tests shewed that spasm was not confined to

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any one type of refraction. Five patients were hypermetropic, three emmetropic, and four myopic. Only two shewed astigmatism of more than one dioptre, one patient being myopic, the other hypermetropic.

Degree of Spasm Achieved.—Here again there was considerable variation. Two achieved 8 dioptries of spasm, one 5 dioptries, three 4 dioptries, one 3 dioptries, two 2 dioptries, and three 1 dioptre. There were individual exceptions, but the myopes seemed to suffer spasms of higher degree on the average than the hypermetropes and emmetropes in the series.

Associated Headaches.—These were not a prominent feature. Patients were not specially questioned about headaches, but details of the headaches were taken when the symptom was spontaneously mentioned. Seven out of the twelve complained of frontal headache, but no stress was laid on the severity of the symptom. Eye-ache was mentioned in a few cases.

Associated Nausea.—This was inquired for in those complaining of headache but was admitted in only two cases.

Heterophoria.—This was usually measured with the Maddox rod. As would be expected, the majority of patients shewed esophoria, but exophoria for distance was noted in a few cases. The distance readings in seven cases of esophoria were 2, 7, 10, 12, 12, 26, and 27 prism dioptries. The exophoria readings were 3, 4, and "gross". Two patients did not possess simultaneous macular perception and Maddox rod readings were impossible. Significant hyperphoria was not noted.

Diplopia.—This was complained of in only four cases. In two of these there was little or no associated measurable alteration in the parallelism of visual axes, one having gross exophoria, and the other gross esophoria.

The symptom was mentioned incidentally, and did not seem to the patient to be of much importance compared with the diminution of distant vision which in nearly every case was the initial severe symptom.

Associated Mental Stress.—This was noted in ten of the twelve patients, and the other two denied associated worry with perhaps a slight over-emphasis on its absence. The factor of mental distress was sufficiently pronounced in most cases to be an inescapable feature.

Case Reports

Case 1 was that of the rather dull daughter of a doctor-father extremely ambitious for her scholastic advancement. The first attack of accommodative spasm occurred when she was cramming for school certificate, and the trouble recurred when she took higher certificate. Afterwards her father articted her to a chartered accountant which entailed

concentrated study. The accommodative spasm recurred before her intermediate examination, when she achieved 7 dioptries of spasm and gross esophoria. She managed to pass the examination, but expects another attack as she approaches the dreaded finals. Her father seems quite incapable of understanding his daughter's fear of these recurrent tests.

Case 2 was a girl who complained of blurred vision shortly before the 11 + examination which she passed successfully. She was found to have 4 dioptries of spasm as estimated under homatropine. The trouble did not recur after she had passed the examination.

Case 3 was an engineer aged 33 with moderate myopia. Both parents developed diabetes in rapid succession, and he was terrified lest in due course he too might develop the disease. His parents' diabetes took an unfavourable course, and he developed about 3 dioptries of accommodative spasm associated with a convergence spasm of 27 prism dioptries. Seven years previously in 1939 he had had a similar attack when worried by the onset of World War II.

Case 4 was a child aged 8 years with a low degree of hypermetropia. Several members of the family have proved pleasant but nervous and "highly strung" persons. The patient was very upset emotionally by the operation of tonsillectomy, and she developed an accommodative spasm of 1.5 dioptries combined with a gross esophoria. She was referred to Miss Sylvia Jackson, the orthoptist, and after a few relaxing treatments the spasm disappeared. At intervals in subsequent years the patient was treated for other eye troubles without obvious physical basis, such as photophobia without overt cause.

Case 5 was a soldier's wife who was first seen with mild accommodative spasm in 1922 by Arthur Griffith when she was 25 years old. She had been in Dublin in the Sinn Fein troubles and had been worried about the safety of her husband and small child. The spasm passed when her husband was posted to India, but she "went blind" for a few days in Palestine in 1927. Spasm recurred in 1944 after war stress. Her husband took her to Canada in 1948 but she did not like the country. There was a recurrence of accommodative spasm and she rushed back to England "for fear of her sight", at the last minute, booking an air passage for greater speed while she left her husband and family to follow by sea. After her return a few orthoptic treatments put her right.

In 1951 her husband took her for a holiday to Ireland, where for a few days everything was lovely until they visited Dublin. Here everything "came back in a rush" from her memories of the "troubles". She had violent headaches and saw an Irish ophthalmic surgeon for sudden "blindness". He found her plus correction for distance needed considerable reduction and ordered much "weaker" glasses. Shortly afterwards she returned to England when the Irish glasses became useless and she reverted to the stronger pair. She had another mild attack in 1956. Normally she is a pleasant rather vivacious woman, but on this occasion her vivacity almost reached manic degree. Although nearly 60 years of age she still retains an accommodative power of unusual range.

Her sister in Canada has similar attacks.

To sum up, this patient is very emotional and easily upset, when she invariably over-accommodates. Unless her distance glasses are considerably undercorrected, in a "brainstorm", things will "always go blurred at a distance". Orthoptic treatment is on occasions useful, but if the orthoptist is not carefully chosen the patient will become obsessed by her ocular condition. A line of breezy self-confident reassurance about her eyes seems to work best, after which she will sometimes run a clear spell of a year or two. Her eyes seem in some way to be a peg on which she can hang her emotional troubles.

Case 6 was a girl aged 19 years, learning radiography, who was emmetropic. Some of her duties took her into a "cancer ward", after which she developed pseudo-myopia, convergence spasm, and diplopia. During the recovery stage she had about 0.75 dioptres of spasm which soon relaxed with orthoptics. She habitually wore exceedingly dark glasses which she protested were necessary even in very poor light. No organic cause was found for her photophobia.

Case 7 was a nervous and anxious ladies' hairdresser aged 30 years and emmetropic. She first had blurred distance vision in 1940 after a mastoid operation, and this became worse when her husband was called up in 1942. Although he was R.A.F. groundstaff and stationed quite near her, she "lay awake all night" worrying about his safety. She was found to be exophoric and suffering from about 1 dioptre of accommodative spasm. The condition rapidly improved after simple reassurance.

Case 8 was a successful farmer aged 33 years, very ambitious and anxious to expand his farm and make it pay. In 1951 he was wearing correction - 3 D sph. for the right eye, and -3.5 for the left eye. This refraction remained unchanged until 1955, when he bought a second farm some miles from the first and tried to run both farms at the same time. His distance vision grew worse and early in 1956 he had 3.5 dioptres of accommodative spasm. He had a large divergent squint but no diplopia as his binocular vision was very poor.

He refused to admit that his farming difficulties could have upset him, asserting rather aggressively that he could tackle twice as much. His only worry was that he and his wife had no children after several years, and "who would inherit the farm?". Later in the year his wife became pregnant, and when last seen he had acquired yet another farm. His accommodative spasm had disappeared and he was in a state of bouncing *joie-de-vivre* and prosperity.

Case 9 was a small, very serious emmetropic boy aged 12 years. He had an intensely ambitious father who had played international Rugby football "scoring tries for his country", and had been captain of a well-known public school. The boy was desperately anxious to go to the same school, and later to enter the church, but the family finances would not run to this unless he obtained an "open scholarship". Unfortunately the lad, though a hard worker, was scarcely of scholarship calibre. He received intensive special coaching but shortly before the examination he "went blind", and was found to have 4 dioptres of accommodative spasm and a considerable exophoria. The father was extremely anxious that drastic treatment should be tried, so that his son could emulate his father's prowess, and all this was discussed with intense earnestness in front of the quailing child. The help of the family doctor was enlisted, and eventually the boy was sent without loss of face to a school less exacting in scholarship and athletics, where he is doing remarkably well. A second younger boy is being sent shortly to the grander school. Curiously the father can find the money for this younger child, though it was "impossible" for the elder brother.

Case 10 was an extremely shy little girl aged 8, who was hypermetropic and suffering from threadworms. She had been referred from school as being "unable to see either for distance or near work". She was found to have about 1.5 dioptres of pseudo-myopia and a severe convergence spasm. This all cleared up after a few days away from school. The child was so shy that it was impossible to hold any sustained conversation with her. As far as her parents knew she liked her school and was quite happy.

Case 11 was a student teacher aged 23 years who "went blind" with frontal headache shortly before an examination. His visual acuity was 6/5 in each eye with -14 D sph. in the right eye, and -12 D sph. in the left. Refraction under atropine showed that 8 dioptres of spasm were present. There was a tendency to exophoria and diplopia. After the atropine wore off he was allowed to sit for the examination with one eye covered to obviate the double vision, and writing with his nose almost on the paper. In this way he succeeded in passing. He found that an occluder over one eye did not prevent pain as the "eye strains underneath it", but it enabled him to manage to write.

He had started work as a grocer's boy; but had achieved a fairly good school certificate by intense study at evening classes. After not being a great success in an office he decided to become a teacher. Unfortunately he found discipline difficult to maintain, and worried greatly in consequence. After several recurrences of the accommodative spasm he was referred to the psychiatric department of King's College Hospital, where he was found quite adequate intellectually for his work. He was however very shy, inhibited, and withdrawn, disturbed over his inability to control class discipline, and doubtful of his own intellectual ability. He hoped to make the grade in some school outside London, where the children were "less tough" and he might be able to hold their interest.

He has now managed to qualify and is doggedly holding down a post as junior teacher. So far his accommodative spasm has not reappeared.

Case 12 was an emmetropic girl aged 16 years, who had been considerably upset by a motor accident in which she was said to have gone through the windscreen. After her return to school she found the blackboard blurring, and had about 1 dioptric accommodative spasm. Atropine was employed as a cycloplegic, and when this was omitted the spasm did not recur.

Conclusions

Spasm of accommodation may occur in either sex. The symptoms may manifest themselves in emmetropes, hypermetropes, or myopes, the more severe cases in this series being in myopes of moderate degree. Frontal headaches were sometimes associated. Either esophoria or exophoria was commonly present, diplopia being associated in certain cases. Nausea and photophobia occasionally occurred.

The most constant precipitating factor in the series seemed to be emotional distress. The typical emotional situation seemed to be either sheer fright or one in which an ambitious but rather inadequate personality was attempting a task a little too hard, in which failure would entail "loss of face". The ex-grocer boy's ambition to become a qualified teacher was natural and laudable for an ambitious youth, but he could not concede to himself that failure might be due to insufficient preparation, to lack of application, to lack of capacity, or even to sheer bad luck. A more aggressive personality may take refuge in the familiar alibi that the examiners ask grossly unfair questions, but a timid and shy personality has an alternative escape route. If his eyes "give out", his failure is completely justifiable even to himself. Like other hysterical manifestations, the symptom is meaningful and useful to the patient.

Human motivation is so obscure that this explanation is advanced with diffidence. It is hard enough to assess one's own motives, much less

penetrate the mind of another. But from the practical viewpoint, spasm of accommodation readily responds to treatment planned on the hypothesis that the symptom is hysterical, in a patient of depressed mood.

Treatment.—Almost any treatment is successful which will tide over the precipitating crisis without puncturing the balloon of self-esteem. Atropinization works if it is carried past the date of the examination. Very often the patient's fears are not solidly based, and his chances of success are objectively better than his subconscious estimate. For such people orthoptics is invaluable, largely because of the unconscious encouragement given by the charming and sympathetic lady orthoptists. Patients can be led to feel that they may as well "have a try", and that in the event of failure "someone will understand". Breezy reassurance of the hearty back-slapping type is always helpful to such patients. They do not understand the psychogenic nature of their symptoms, and their fear of blindness is genuine and real. They tend, as a group, to be extremely naive, so that even such inexperienced advice on their general problems as may be given by an ophthalmologist, may sometimes help them. The outlook for an individual attack of accommodative spasm is always good. The frequency with which attacks recur in situations of stress in spite of treatment, emphasizes the doctor's difficulty in attempting to modify the personality of a patient.

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