DISSEMINATED SCLEROSIS.

A thesis for the degree of M.D.

by

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An analysis of 30 cases and commentary of the etiology, symptomatology, and differential diagnosis, with special reference to subacute combined sclerosis. 12 of the cases came under my personal observation, for the notes of the remaining cases, I am indebted to W. B. Warrington, F.R.C.P.

Occurrence.

Disseminated sclerosis is a disease of early adult life. In the 30 cases analysed, 12 or 40 per cent commenced before the age of 20. Above the age of 40 only 3 cases or 10 per cent.

In one case symptoms commenced when the patient was only 7 years old, in another case there was no sign of disease before the age of 50.

Of Byrom Bramwell's 110 cases

77 per cent occurred between the ages of 16 and 35.

Of the 30 cases here analysed

66 per cent occurred between the ages of 16 and 35.

The disease is much more common in this country than America, the reason for which is not at all obvious.

Dana has suggested, that the circumstances and surroundings of the hospital class in America are better than the circumstances and surroundings of the hospital class in this country; but Byrom Bramwell states that the difference is not confined to the hospital class, also that the disease is more common in the well to do hospital patients, than in the very poor.

Other/

Other reasons such as climate, better diagnosis and the heavy percentage of influenza in this country, have been mentioned, but do not merit comment.

Of all nervous diseases it occurs

1 in 60 in this country.

1 in 200 in America.

ETIOLOGY.

The causes as assigned by the patients or adjudged from the notes of the 30 cases were as follows:-

Influenza 6 cases.

2 of the 6 cases occurred in the same family Mother and son. In these two the cause seemed definite.

In 2 cases symptoms of disseminated sclerosis commenced immediately after the influenza.

In 1 case influenza occurred 4 years before the first symptom of disseminated sclerosis was noticed.

In 1 case there was also a very definite history of syphilis.

Trauma. 2 cases.

In 1 case the patient never recovered from the injury.

In/

In the other case symptoms of nervous disease did not commence until some years later.

Constipation. 3 Cases.

2 of these 3 cases occurred in women.

Fright. 1 Case.

Dead born child. 1 Case.

Alcohol. 1 Case.

Exophthalmic goitre. 1 Case.

In the remaining 15 cases no cause was assignable.

Under causation must be mentioned

(1) HEREDITY.

In the 30 cases analysed an instance occurs of one member of the family with disseminated sclerosis and a brother with athetosis.

Another instance of mother and son both suffering from disseminated sclerosis. In this case both commenced after an attack of influenza, and there seems no reason to suspect heredity as an etiological factor. The mother was 40 years old and the son 19 when the symptoms first commenced.

Freidreich has noted disseminated sclerosis as a family disease.

Leuch/

Leuch records a case of a woman with disseminated sclerosis who bore a child, healthy until 7 years old, it then commenced with typical symptoms of disseminated sclerosis.

Eichhorst recites an instance of a woman, and son age 8 years, both suffering from disseminated sclerosis.

Ernest S. Reynolds published an account of a patient suffering from disseminated sclerosis with exophthalmic goitre, whose brother and sister were both doubtful cases of disseminated sclerosis, the father died of Melancholia.

Although we have a few instances like these, yet the preponderance of cases without such history is so great that Heredity must not be considered as an etiological factor.

(2) INTOXICATIONS.

This heading includes lead, copper, tin, zinc and alcohol.

In one of the 30 cases there was a very marked history of alcohol without any other cause assignable.

In another case the patient was a painter by trade, but never suffered from any symptoms of lead poisoning.

Oppenheim cites cases due to lead, zinc, mercury and tin.

Byrom/

Byrom Bramwell in a series of 110 cases records 2 due to alcohol.

Against such causes we must consider the fact that disseminated sclerosis is particularly common in young ladies, who are certainly free from such influences.

(3) INFECTIOUS DISEASES.

In this series of 30 cases, as previously mentioned 6 at some time or other suffered from influenza. The instance of mother and son both suffering from disseminated sclerosis, the influenza was contracted at the same time and both commenced about a year after with symptoms of organic nervous disease. Although there were other members of the family these were the only two who suffered from influenza. The cases were quite typical of disseminated sclerosis, and resembled one another to a great extent, one however being further advanced than the other.

Of the other cases, in two the symptoms of organic disease followed the immediate convalescence of influenza.

One case occurred 4 years after an attack of influenza.

The remaining case, the patient had also syphilis.

Previous/

Previous to the specific infection there had been such symptoms as cramp and numbness in the legs but immediately after the syphilitic infection the symptoms of disseminated sclerosis followed in a rapid manner.

These 6 cases were the only ones in which infectious disease could be attributed as the cause.

Ebstein records cases during convalescence from Typhoid.
Joffroy " " " " " Cholera.
Charcot " " " " " Small pox.
Shornfeld " " " " " Diphtheria.
Kahler " " " " " Scarlet Fever.
Massolongo " " " " " Influenza.
Williamson " " " " " Phlemoncus Angina
Torti. " " " " " Rheumatism.
Angelini. " " " " " Malaria.

Oppenheim, Leyden, Golscheider and Sach all favour occasional infectious origin.

Most authorities do not recognise syphilis as a cause but Moncoroo quotes 21 cases occurring in patients from 16 months to 7 years, in the majority of which inherited syphilis was believed to be the cause.

Michailow and Jacobson regard syphilis as an etiological/

etiological factor and the latter quotes cases.

In 110 cases seen by Byrom Bramwell not one could be attributed to syphilis.

(4) TRAUMA 2 Cases.

One case seems to have been of the nature of a fit, the patient fell down when running and since that time has never entirely recovered the use of the legs.

In the other case symptoms did not develop for some years after the injury.

Mendel insists on the frequency of trauma as an etiological factor.

Gaupp and Blenche record cases recently, whose origin seems to be undoubtedly due to trauma.

On the other hand most people can recall some injury during childhood. Why should disseminated sclerosis be due to injury any more than other nervous diseases, such as Amyotrophic lateral sclerosis etc. etc.?

(5) FRIGHT. 1 case.

In one of the 30 cases patient directly attributed his illness to fright.

Byrom Bramwell in his 110 cases had one due to fright.

(6) /

(6). CONSTIPATION. 3 Cases.

2 of these 3 cases were females and the condition is very common in the female sex.

Among the causes given to which might be added many others, infectious diseases seem to play a prominent part.

If such is the case you would expect the age incidence to be before the age of 15 years, but we know this is not the case.

Such diseases as Influenza and Scarlet Fever when immediately followed by disseminated sclerosis may merely serve to attract attention to the already commenced organic disease.

Again how can we by taking infectious diseases as the cause, explain the relapses and remissions which are so highly characteristic of disseminated sclerosis.

For this we must turn to the

PATHOGENESIS.

The two theories at present exciting attention are

(1) "That the sclerotic patches are due to some irritant distributed by the blood through the nervous system."

Such irritant might be generated by some infectious disease as influenza, but we cannot imagine fresh doses/

doses of the toxine to be liberated years afterwards and cause a relapse. But on the other hand a toxine formed within the body would play the same part, and at certain periods might be regenerated within the body with the result that a relapse occurs.

We have no evidence of such an intoxication, only 3 of the 30 cases had a history of constipation. If such were the case we must compare it with the toxine causing Ecclampsia. In the one case it acts specially on the renal tissue and in this case it attacks the nervous system. In the case of Ecclampsia we have no evidence of an auto-intoxication, except from the manner in which the poison attacks the renal tissue, and yet this latest theory is now generally believed to be the cause of Ecclampsia. Why is it not the same in the nervous system in cases of disseminated sclerosis? The very name of the disease seems to upset such theories as trauma, etc., it seems quite incredible that an injury to any part of the body could cause such an extensive and disseminated disease of the nervous system.

It is possible to conceive that such things as fevers, fright and injury might be exciting causes (i.e.) excite an autointoxication.

(2) A Theory advocated by Strumpell.

"That/

"That the disease is due to a congenital malformation of the neuroglia, which renders it more liable to be affected by an irritant poison, than the nervous tissue of a normal individual."

This theory is quite compatible with an acute febrile causation or with an auto-intoxication, which must be deemed exciting causes acting on an already malformed central nervous system.

The same applies to such extraneous causes recited such as fright, cold, fatigue and trauma.

Byrom Bramwell records cases being exempt from symptoms for very many years, in fact in one case certainly the patient appears to be cured. In the light of Strumpell's theory of maldevelopment, once the process had started, although we might accede to the possibility of slight remissions and relapses, yet a permanent cure would appear quite impossible. In such a case the presence of any symptom as the extensor toe reflex, would be the result of previous organic disease, and would not indicate any active process.

R. G. Rows suggests that the pathogenesis is due to an error of evolution, commencing in the last few months of intra-uterine life. He excludes inflammatory/

inflammatory origin by the absence of residues of morbid processes in the vessels, kidneys and heart. At the same time he suggests that this strengthens the view of general evolutive disturbances.

The naked eye appearances of the sclerosed patches suggest that they are of the nature of thrombotic or embolic origin. By this means we can imagine the neuroglia tissue around the nerve fibres, to be in a state of degeneration, whereas the nerve fibres themselves escape the morbid processes for a great length of time and this we find to be the case.

This again would fit in well with the relapses and remissions. Fresh thrombotic processes causing the relapses, and time during which no fresh toxine is added would account for a remission.

An interesting fact suggestive of an intoxication is the fact "that partial temporal Optic Atrophy is a common symptom in toxic amblyopia." This is also according to many authorities the most constant change present in the disc in cases of disseminated sclerosis.

CLINICAL TYPES.

A case presenting all the classical symptoms is very uncommon, more usually we meet with the "formes fruste" in which perhaps there is one classical symptom, otherwise the case resembles some other nervous disease.

According as the disease attacks the brain, spinal cord or both together, so we get three main types.

Tredgold in the Review of Neurology and Psychiatry 1904, recognises 7 clinical types as follows:-

1. Classical type with tremor, nystagmus and scanning staccato speech.
2. Spastic Paraplegia - clinical picture of Lateral Sclerosis.
3. Combined lateral and posterior sclerosis,- (i.e.) a spastic paraplegia accompanied by sensory changes.
4. Transverse Myelitis type.
5. Cerebellar type - headache, vomiting, giddiness, cerebellar gait and other symptoms suggestive of cerebellar tumour.

6./

6. Hemiplegic type - apoplectic attacks followed by hemiplegia of a transient nature.
7. Hysterical type - Transient paralysis and emotional characteristics.

It is seldom however that these types are distinct, more often cases (i.e.) "formes fruste" are met with, combining together symptoms of these so called distinct types of the disease.

Buzzard says that no typical picture can be drawn of the disease.

Provided we remember the characteristic multiplicity of lesions, such classification seems quite bewildering and unnecessary.

Marie classifies cases according to their progress, and recognises 4 types as follows:-

1. Chronic progressive type.
2. Chronic type with exacerbations.
3. Chronic remitting type.
4. Type with permanent improvement or even cure.

This classification appears better than that of Tredgold but even in this case the types do not remain distinct.

In addition there certainly seems to be an acute or subacute type not mentioned by Marie.

SYMPTOMATOLOGY.

Initial Symptoms.

Just as the disease attacks the central nervous system in apparently any part, so the initial symptoms vary.

The result of the analysis of 30 cases is given below:-

1. Motor Paresis in 7 cases.
   - (a) Lower extremities 4 cases.
   - (b) One leg. 1 case.
   - (c) One hand. 1 case.
   - (d) Face. 1 case.

2. Sensory Symptoms in 9 cases.
   - (a) Paraesthesia of legs, in 5 cases.
   - (b) Paraesthesia of face in 1 case.
   - (c) Pains in legs in 2 cases.
   - (d) Pains in back in 1 case.

3. Ataxia of lower extremities in 6 cases.

4. Sphincter trouble
   - Bladder 2 cases.

5. Convulsive seizure in 2 cases.

6./

6. Cerebral — in 4 cases.

(a) Amblyopia — in 3 cases.

(b) Diplopia — in 1 case.

In some of the cases more than one symptom was complained of. In consequence I have made this analysis from the symptoms, which at the onset appeared to be the most prominent.

ANALYSIS OF PRINCIPAL SYMPTOMS.

General condition.

(a) Well nourished in	9
(b) Emaciated	2
(c) Emaciated and anaemic	3
(d) Anaemic with stupid vacant expression	1
(e) Condition not specially noted	15
	30

Intellectual Functions.

(a) Emotional	5
(b) Emotional with impaired memory	1
(c) Emotional with deficient mental power	2
(d) Impaired memory	2
(e) Deficient mental power	1
(f) Intellectual functions normal in	3
(g) Condition not specially noted in	16
	30

In those cases where the intellectual functions are not noted they were probably normal. If this was the case we have 36.6 per cent in which the intellectual functions were not normal. Emotion seems to be decidedly common especially in young girls, hence the difficulty of the differential diagnosis from hysteria.

There seems to be no doubt that the disease excites hysterical manifestations. The emotion usually takes the form of meaningless and uncontrollable laughter/

laughter as stated by Byrom Bramwell. This I found to be the case, in one patient it alternated with most distressing crying which seemed quite uncontrollable for a few minutes.

Insanity in disseminated sclerosis is very rare, but M. Lannois in the Review of Neurology, Sept.1903 records a case in which the patient developed delusions of the exotic form, ideas of persecution and megalomania. The pathological condition was one of macroscopic lesion with special localisation.

GIDDINESS.

This symptom occurred in 3 out of 14 cases or 21.4 per cent in which it was specifically recorded in the notes.

Byrom Bramwell lays stress on its frequent occurrence and in 110 cases found it present in 69 per cent.

HEADACHE.

Headache was specifically noted in 19 cases, and was present in 7 or 36.8 per cent. In 4 cases the headache was severe. In 2 cases it was an early symptom. In the 11 cases not noted the symptom was probably absent. In Byrom Bramwell's 110 cases it was present in 38 or 34.5 per cent.

VOMITING.

Present in 3 cases or 10 per cent.
In one case the vomiting was associated with diarrhoea and was thought to be a crisis.

In Byrom Bramwell's 110 cases vomiting was present in 10 per cent. It is however regarded by him as of rare occurrence. In the journal of Neurological diseases 1898, Sach in his "critical digest" mentions gastric crisis as occurring along with lightening pains, rendering the differential diagnosis from tabes somewhat difficult.

CONVULSIONS.

3 cases or 10 per cent.
Epileptic fits 2 cases, both since the commencement of symptoms of disseminated sclerosis. In one of these two cases the first fit occurred 5 years after the commencement of the illness, the patient was then at the age of 43.
Apoplectic fit 1 case, being in this particular case the first sign of disease

In Byrom Bramwell's series only 3 cases of convulsions occurred or 1.8 per cent.

SLEEP.

This function is seldom disturbed. In one of the/

the 30 cases that of a boy age 10 years confined to bed, excessive sleep was a marked feature, the patient had to be aroused on each occasion for his meals.

Byrom Bramwell had 5 cases with excessive tendency to sleep.

SPEECH.

Typical scanning or staccato speech occurred in	4
Speech slightly impaired in	5
Slurring speech due to emotion? in	1
No impairment in	20
	30

Hence the speech was affected in 10 cases or 33.3 per cent.

Scanning or Staccato speech was one of the classical symptoms as described by Charcot, but is not of frequent occurrence. There is, however, in a large number of cases some alteration from the normal. The typical scanning speech is sometimes very evident. In other cases it requires test words to make it noticeable, for such purposes "Royal Artillery" is excellent, the patient pronouncing it thus Roy-al Ar-til-ler-y.

In 110 cases of Byrom Bramwell's, speech was affected in 60 per cent, but in a considerable number this affection was only slight or temporary.

Sach/

Sach in his critical digest says that any alteration in speech is possible. In one case under his notice opposition of the vocal cords was so imperfect that the patient spoke in whispers.

Sach also notes a case of nasal speech and another of true bulbar speech. Leube found disturbance of the innovation of the vocal cords in one case.

GAIT.

In the 30 cases examined, the gait was found to be affected in some way or other in 29 cases or 96.6 per cent.(i.e.)in only 1 case or 3.3 per cent could the gait be considered normal.

Ataxia was present in 19, in 4 of these there was in addition the element of spasticity.

Paraplegia was present in 9 cases.

Hemiplegia 1 case.

In Byrom Bramwell's series of 110 cases only one or .9 per cent was found with normal gait.

The gait itself may best be described as "shaky" in the majority of cases. It frequently resembles that seen in primary lateral sclerosis and may be described as follows:- Feet drawn along the floor and overlapping, legs stiff and adducted with perhaps staggering irregular uncertain steps.

In/

In some cases the gait is purely spastic in others entirely ataxic.

Rarely do we get the typical gait of locomotor ataxia.

Cerebellar gait is fairly common in those cases of disseminated sclerosis in which the symptoms are those of cerebellar tumour.

Rombergs symptom.

This symptom was not noted in 7 cases. In the remaining 23 cases it was present in 19 or 82.6 per cent.

Loss of Motor Power.

In the 30 cases analysed loss of motor power was present in 22 or 73.3 per cent. In 10 of them or 45.4 per cent the iliopsoas is specially mentioned as being affected either alone or in conjunction with other muscular groups.

In 8 cases motor power was normal.

In those with loss of motor power the distribution was as follows:-

General	2
General especially iliopsoas	3
Iliopsoas alone	4
Right leg especially iliopsoas	1
Both legs.	7
Arm and legs	1
Right Arm and right leg	2
Left arm and left leg	1
Left arm	1

In Byrom Bramwell's 110 cases loss of motor power was present in 86 or 78.1 per cent. There is no mention of weakness of the iliopsoas which appears as an outstanding feature in these 30 cases.

I am unable to find in literature any reference to the subject.

VOLITIONAL OR INTENTION TREMOR.

This was present in 19 or 63.3 per cent. Volitional or Intention tremor is one of the classical symptoms and we see that it was present in more than half the cases.

Byrom Bramwell records it in 74.5 per cent of his 110 cases. Usually present and more easily demonstrated in the upper extremities, but may also be found in the legs.

As its name implies, it occurs during voluntary or intentional movement. It is quite rhythmical in nature, but varies in intensity. Its rate is 7 or 8 per second. The tremor may be exceedingly large. In one case in which it was exceedingly well marked, the amplitude was at least 7 or 8 inches on/

on either side of the axis line. The axis line is the line drawn from the initial position of the finger, to the object on which the patient is trying to place the finger. A good test for it is the "finger nose," for which the patient is asked to touch the tip of his nose with the index finger which is extended, while the arm is stretched out from the body. At the commencement of the movement the tremor is small, but when nearing the object increases in magnitude, this is one of its great characteristics. Another characteristic is that the tremor must occur from side to side of the axis line and must not be a rotatory movement. These two features distinguish the tremor of disseminated sclerosis from that which occurs in cases of cerebellar tumour. When not noticeable with the finger nose test, it is sometimes discernible by asking the patient to write or draw a straight line. It differs essentially from the tremor of paralysis agitans in that it only occurs on voluntary movement, whereas the tremor of paralysis agitans is diminished, rather than increased by voluntary movement.

Bouchard in the Journal of Neurology, Feb. 1903 records a case of disseminated sclerosis which was characteristised by the persistence of the tremor during repose. The notes of the case are as follows:-

Volitional/

Volitional tremor marked by incessant involuntary movements of the legs and arms, the clothes over the thighs are worn through by the movements of the hands. During sleep these movements disappear:-

These movements appear to be more of the nature of chorea. Such movements are excessively rare.

Choreiform movements are usually quite easily distinguishable from the intention tremor by the following characteristics wriggling , twisting, shrugging and grimacing.

The tremor associated with exophthalmic goitre is also quite distinct. It is not an intention tremor but is excited by emotion. It is a very fine variety being much more rapid than the intention tremor of disseminated sclerosis.

The toxic tremorsof alcohol, mercury etc., are also quite distinct, and more nearly resemble the tremor of paralysis agitans.

SUBJECTIVE SENSATIONS.

This includes amblyopia, pains in various parts of the body, cramp, numbness, tingling and tickling sensations.

Some such sensations occurred in 21, or 70 per cent of the 30 cases.

Of/

Of the sensations mentioned numbness was by far the most predominant, and was present alone or in conjunction with other sensations in 14 cases or 46.6 per cent.

Pains in the sacrum occurred in 7 cases or 23.3 per cent.

The other sensations are so varied that they are impossible of classification.

The following is a detailed description.

Case 2. Amblyopia with occasional numbness of the right leg.

Case 4. Cramp and occasional attacks of numbness in the legs. Sharp shooting pains in the legs and stabbing pains in the sacrum.

Case 5. Pains in the feet followed by numbness occasionally cold and blue. Later a distinct girdle sensation. Occasional amblyopia.

Case 6. Severe sacral pain, numbness and pains in the legs.

Case 7. Pain in the sacrum, numbness of the legs and amblyopia.

Case 8. Pain in the sacrum, numbness of the legs and amblyopia.

Case 9. Numbness of the legs and amblyopia.

Case 12/

Case 12. Numbness of the left leg followed later by numbness of the hands and feet.

Case 14. Pains in the sacrum.

Case 15. Tickling sensation in the lower extremities.

Case 16. Tired feeling in the legs and thighs later became painful.

Case 17. Cramps in the left leg and left arm. Severe pains shooting down left leg associated with cramps in the stomach, diarrhoea and vomiting. ? Crisis.

Case 19. Tired feeling in the head, and tingling of the right leg.

Case 20. Numbness and loss of sensation in the right arm.

Case 21. Numbness and tingling of the right leg.

Case 25. Numbness in the hands.

Case 26. Pains shooting from the legs in the mornings into the sacrum, during the day sore feeling around the waist.

Case 27. Numbness and tingling in the thighs and feet.

Case 28. Numbness in the arms.

Case 29. Pain in the sacrum.

Case 30. Numbness and weakness in the right lower extremity, especially the thigh.

The predominant feature of these subjective sensations is their fleeting character. They may be present one day and absent the next, or may remain for some weeks and then be absent for months, only to return again probably with additional symptoms.

OBJECTIVE SENSATIONS.

These symptoms were noted in 24 of the 30 cases and were found to be present in 8 or 33.3 per cent as follows:-

Partial anaesthesia	3
Muscle sense impaired.	1
Muscle sense completely lost	1
Sense of position lost	1
Almost complete anaesthesia with partial analgesia	1
Slight anaesthesia and slight analgesia	1
	8

According to the old teaching the absence of sensory symptoms was characteristic of disseminated sclerosis. This has been disproved by Erb and Oppenheim.

That they do occur is now quite undoubted, they are however not common. We find them most frequently in young girls with disseminated sclerosis and in these cases there is often the element of hysteria superimposed. This in some cases accounts for the sensory symptoms.

DEEP REFLEXES.

Knee Jerk.

In the 30 cases examined the knee jerk was

exaggersted in 27 or 90 per cent.

absent in 2 or 6.6 per cent.

normal in 1 or 3.3 per cent.

All deep reflexes are usually exaggerated, and the probable cause of the absence when it does occur of the knee jerk, is that sclerosis has attacked the lumbar enlargement of the cord.

Ankle Jerk.

This symptom was specifically mentioned in 29 of the 30 cases, in these it was

exaggerated in 21 or 72.4 per cent.

absent in 2 or 6.8 per cent.

Ankle Clonus.

Present in 17

Absent in 12

Doubtful in 1

Hence inclusive of the doubtful case it was present in 60 per cent.

This symptom when definite is most useful in excluding functional disorder, but it must not be confused with the pseudo clonus sometimes present.

The/

The exclusion is best made by putting the tendo achillis further on the stretch, if the clonus still continues it is probably organic, but the pseudo clonus will probably cease.

Triceps Jerk.

This symptom was specifically noted in 14 cases and was found to be

Exaggerated in 5
Absent in 2
Normal in 7

Hence it was affected in 7 cases or 50 per cent.

Wrist Jerk.

Specifically noted in 14 cases as follows:-

Exaggerated in 5
Absent in 2
Normal in 7

Hence it was affected in 7 cases or 50 per cent.

On looking up the notes I find that the triceps jerk and the wrist jerk were affected similarly in precisely the same cases. This I should imagine would be usual, just as the knee jerk and ankle jerk are usually similarly affected.

Jaw Jerk.

This was noted in 13 cases and was found to be present in 6 or 46.1 per cent.

SUPERFICIAL REFLEXES.

Abdominal and Cremasteric.

These were only noted in 12 cases and were as follows:-

Normal	in	4	
Absent	in	6	or 50 per cent.
Sluggish	in	1	
Exaggerated	in	1	

Hence affected in 8 cases or 66.6 per cent.

Byrom Bramwell lays particular stress on the absence of the superficial reflexes.

In his series of 110 cases the reflex was absent in 83.9 per cent.

Muller and Strumpell agree and attach great weight to the absence of abdominal reflexes as diagnostic of the disease even in the earliest stages.

In any case it is a symptom that should more often be investigated than it is at present.

PLANTAR REFLEX.

This reflex was investigated in all of the 30 cases and was found to be as follows.

Double extensor response slow and methodical	13 or	43.3 per cent.
Double extensor response not quite typical	3 or	10 per cent.
One typical extensor other indefinite	3 or	10 per cent.
One typical extensor other no response	1 or	3.3 per cent.
One typical extensor other flexor response	2 or	6.6 per cent.
Normal or double flexor response	2 or	6.6 per cent.
Both indefinite response	4 or	13.3 per cent.

From this we see that the Plantar Reflex was affected in 28 of the 30 cases or 93.3 per cent. The extensor response was present in one or both feet in 22 or 73.3 of the 30 cases.

The plantar reflex is obtained by tickling or scratching the sole of the foot.

If normal a flexion of the big toe occurs, if Babinski's sign is present an extension of the big toe takes place.

The scratching or tickling is perhaps best accomplished by the head of a pin drawn lightly in the longitudinal axis of the foot. The extensor response is more marked by scratching the outer part, and the flexor response from the inner part. The typical Babinski sign is the slow deliberate and methodical extension of the big toe, frequently accompanied by spreading of the outer toes.

Unfortunately the response is sometimes indefinite, it being impossible to tell whether extension or flexion has occurred. The reason for this is obvious the movement really being a transition stage between flexion and extension. It is often typically exemplified in the child commencing to walk, during infancy the response is flexion because of the imperfect/

imperfect development of the pyramidal tract. When the child is learning to walk we get the transition stage with an indefinite response.

In cases where no reflex can be obtained great care should be taken to see that the foot is free from perspiration, and yet warm. Perspiration and cold both tend to prohibit the response. The plantar reflex according to Buzzard is frequently absent in functional disease. It is however very doubtful if the plantar reflex is ever constantly or persistently absent in healthy subjects. If a definite typical response occurs functional disease should never be diagnosed. Hence it is a most valuable sign to differentiate hysteria from disseminated sclerosis. It also frequently occurs in the earliest stages of the disease, which adds to its value as a clinical sign.

ORGANIC REFLEXES.

Bladder.

In the 30 cases under examination the bladder reflex was affected in 19 cases or 63.3 per cent. as follows:-

Incontinence of urine	7
Precipitate micturition	3
Forcing	4
	14

	14
Retention	2
Retention and incontinence	1
Forcing and precipitate micturition alternately	1
Increased frequency	1
	19

Affections of the bladder in disseminated sclerosis have two main characteristics

(1) They occur as an early symptom. Hence when present they are extremely valuable in the diagnosis of early disease.

(2) The symptoms are never severe, and so differ very much from the bladder troubles found in other nervous diseases.

Like many other symptoms of disseminated sclerosis they are often of a fleeting character.

RECTAL REFLEX.

The condition was specifically noted in 19 cases and of these 19 only 4 or 21 per cent were affected as follows:-

Incontinence	1
Constipation	3

Of those suffering from constipation 2 were females who had been troubled in that way all their lives/

lives, and in whom the condition was apparently quite natural.

Incontinence of faeces is always a serious condition and is invariably a symptom of organic disease or mental weakness.

OCULAR PALSY.

This symptom was specifically noted in 25 cases and was present in 4 or 16 per cent. as follows:-

External strabismus	3
Internal strabismus	1
	4

In the 5 cases in which it was not noted it was probably absent. If we take this for granted the percentage would be 13.3.

DIPLOPIA.

In the 30 cases analysed the result was as follows:-

Present	in 8
Absent	in 16
Not noted	in 6

Of the 24 cases noted it was present in 8 or 33.3 per cent.

It is a valuable symptom as it is said to frequently occur at the commencement of the disease. It is usually of a temporary character, and is perhaps present for one week and absent for months.

NYSTAGMUS.

was present in 19 cases or 63.3 per cent. The varieties were so numerous that classification was impossible, as follows:-

Case 2. Fine, lateral more marked to the right than the left, upwards rotatory.

Case 3. Fine nystagmus in all directions.

Case 4. Slow, large amplitude, more marked to the left than the right.

Case 6. Nystagmus in all directions, more marked to the right than the left.

Case 9. Lateral, to the left slow large amplitude, to right sharp, quick and small amplitude. Upwards, sharp, quick and small amplitude.

Case 12. Slight nystagmus to the left.

Case 13. Lateral and vertical.

Case 14. Lateral.

Case 15. Lateral to the right, more marked than to the left, upwards rotatory.

Case 16. All directions especially vertically downwards.

Case 20. Lateral to right, the right eye only to left both eyes. Vertical upwards.

Case 21. Slight lateral nystagmus to the right.

Case 22. Slight in all directions.

Case 23. Slight lateral.

Case 24. Slight in all directions.

Case 26./

Case 26. Lateral nystagmus.

Case 28. Lateral nystagmus.

Case 29. Slight nystagmus.

Case 30. Lateral to the right and vertically downwards.

In some respects the nystagmus very much resembles the volitional tremor, as it is much more marked on voluntary forced movement, but it differs in that it is present in some cases during repose.

Lateral nystagmus is by far the most common variety, although vertical does occur as seen from the above notes, in no case however, did it occur alone.

Sach in his critical digest says that nystagmus is the commonest ocular symptom,

occurring in 58 per cent of Uhthoff's cases.

" " 70 " " " Maries cases.

" " 70.9 " " " Byrom Bramwell's cases.

Sach says it may be vertical, horizontal, diagonal or rotatory. Nystagmus occurs in conditions apart from disseminated sclerosis chief amongst these are

Coal miners nystagmus.
Ear affections.
Congenital (usually rotatory)
Brain tumour.

When present with organic disease disseminated sclerosis must always be excluded before another diagnosis is made.

PUPILS.

In 29 of the 30 cases the pupils reacted to light and accomodation. In the remaining case there were definite adhesions of the iris due to a previous iritis.

In 2 cases the pupils were dilated.

In 3 cases one pupil was larger than the other.

A diagnosis of disseminated sclerosis in which the pupils do not react to light should always be very guarded as the case is probably one of syphilitic cerebro spinal sclerosis.

VISION.

Of the 30 cases this condition was not noted in 3;of the remaining 27 cases

it was normal in 10

affected in 17 or 62.9 per cent.

The variation from normal in each case was as follows, the figures representing Snellens test types.

Case 1 Considerably impaired.

Case 2 Right eye $\frac{6}{12}$ left eye $\frac{6}{9}$

Case 3 Right eye $\frac{6}{12}$ left eye $\frac{6}{9}$

Case 4 Right eye $\frac{6}{24}$ left eye normal.

Case 5 Right eye $\frac{6}{12}$ left eye $\frac{6}{12}$

Case 8 Right eye $\frac{6}{60}$ left eye $\frac{6}{60}$

Case 9 Almost completely blind in both eyes.

Case 10/

Case 10 Myopic Right eye $\frac{6}{24}$ left eye $\frac{6}{36}$

Case 11 Slightly impaired vision.

Case 15 Right eye $\frac{6}{18}$ left eye $\frac{6}{36}$

Case 16 Right eye $\frac{6}{12}$ left eye $\frac{6}{18}$

Case 18 Right eye $\frac{6}{18}$ left eye $\frac{6}{12}$

Case 20 Right eye $\frac{6}{9}$ left eye $\frac{6}{12}$

Case 21 Right eye normal left eye impaired vision.

Case 22 Right eye $\frac{6}{24}$ left eye $\frac{6}{24}$

Case 25 Myopic.

Case 30 Right eye $\frac{6}{9}$ left eye normal.

Sach maintains that complete blindness is very rare. Case 9. The patient was almost completely blind but could just discern large objects but was unable to state their nature.

Gowers and Marie state that visual affections in disseminated sclerosis may be unilateral and this is confirmed by cases 4, 21 and 30., in which one eye only was affected.

An interesting point as regards the vision is that it bears no relation to the amount of optic atrophy present, as ascertained by ophthalmoscopic examination. A case with marked optic atrophy may have only slight variation from the normal vision. Charcot explains this by stating that, optic nerves and tracts which are the seat of sclerotic patches, have/

have naked axis cylinders still untouched by disease. We find other cases with considerable dimness of vision which on ophthalmoscopic examination reveals an apparently normal disc. As an explanation Byrom Bramwell suggests that the sclerotic patches which are the cause of the dimness of vision, do not extend sufficiently far forwards to implicate the disc.

The dimness of vision may be rapid or slow in onset, and may be temporary or permanent, usually the latter.

COLOUR VISION.

Of the 30 cases examined the colour vision was only noted in 13, and was found to be as follows:-

Normal in	6
Completely lost in	1
Central scotoma in	1
Peripheral scotoma in	5

Hence affected in 7 of the 13 cases or 53.7 per cent.

All authorities seem to agree that the disturbance in colour vision is just the opposite to that found in hysteria.

In hysteria the field of vision for red is beyond that of normal, at the same time there is concentric diminution of the field of vision for other colours. Central scotoma never occurs.

Sach/

Sach in his critical digest says that concentric diminution has been observed in cases of disseminated sclerosis, but only when hysteria is super-imposed.

One of the 30 cases, that of a man, age 35 years had symptoms quite typical of disseminated sclerosis, (i.e.) speech, nystagmus tremor and optic atrophy , etc. He had no symptoms of hysteria but had considerable concentric diminution of the field of vision for colours.

Another case, that of a boy age 15 years had a peripheral scotoma specially marked for yellow.

The other three cases occurred in females, in two of them most certainly the element of hysteria was superimposed. From the notes of these cases, we must acknowledge that concentric diminution or peripheral scotoma does occur without the additional element of hysteria being superimposed.

OPHTHALMOSCOPIC EXAMINATION OF THE OPTIC DISCS.

In 2 of my 30 cases the condition of the discs was not noted. Of the remaining 28 cases definite pathological lesions were present in 16 or 57.1 per cent.

In 1 case or 3.5 per cent the condition was doubtful.

Optic atrophy occurred in both eyes in 10 cases

or/

or 35.7 per cent.

In 3 cases the atrophy was far advanced and in one of these 3 cases the disc was quite white, the vessels appearing like fine threads.

In the majority of the cases the change was slight, and the usual lesion was situated on the temporal half of the disc.

In no case was there any neuritis.

Sach says that incomplete atrophy occurs in 50 per cent of cases usually affecting the temporal half of the disc, in which case, it is almost pathognomonic of disseminated sclerosis.

Byrom Bramwell, Uhthoff and Buzzard all lay great stress on optic atrophy as a symptom of disseminated sclerosis.

Byrom Bramwell says he has seen cases in which it was the only definite sign of organic disease, and the only means of differentiating a case of commencing disseminated sclerosis from hysteria.

Uhthoff states that with the exception of cerebral tumour and tubercular meningitis, there is no disease of the nervous system (not even tabes) which is so often accompanied by ophthalmoscopic changes as disseminated sclerosis.

Optic neuritis does occur and was found by Uhthoff in 3 cases out of 100 and by Byrom Bramwell in 3 cases out of 110.

Another/

Another distinctive point about the disc change is that the condition is a primary atrophy and not secondary. Whereas in a case of advanced cerebellar tumour, atrophy if present is always secondary.

DIFFERENTIAL DIAGNOSIS.

If we think of the multiplicity of the lesions present in disseminated sclerosis; or of the fact that either the brain or spinal cord may be attacked alone in the initial stages of disease; or again of the clinical types as described by Tredgold, we must at once realise the difficulty of the differential diagnosis.

Buzzard says no typical picture can be drawn of the disease. The diagnosis must be made in many cases by the process of exclusion. We must exclude not only any other organic disease of the brain and spinal cord, but above all we must exclude functional disease. This we must consider to be the greatest stumbling block in the diagnosis of disseminated sclerosis.

Serious mistakes have been made by diagnosing a commencing disseminated sclerosis as hysteria, the difference in the prognosis in the two cases is so great, that the mistake becomes wholly irretrievable.

Differential diagnosis from

1. HYSTERIA.

Of all the diseases with which we are liable to confound disseminated sclerosis, hysteria is the commonest.

Both/

Both occur in early adult life, and both may appear to arise from slight injury or shock or perhaps following some infectious disease. According to Byrom Bramwell disseminated sclerosis is more common in females than males, and of course we know how much more manifest hysteria is in the female, than in the male. Another difficulty is that hysteria is frequently superimposed on organic basis. Again the temporary character of the initial symptoms, makes them resemble hysterical manifestations to a remarkable degree.

Of primary importance are

(a) Changes in the optic discs.

Although we may have defective vision in both disorders, we never have any pathological lesion of the optic disc in hysteria. All authorities agree on this point.

(b) Extensor toe reflex. This never occurs in functional disease and if persistently present is always a symptom of organic disease. In the "Brain" 1898 in an article upon the investigation of the plantar reflex, 35 cases of functional disease were examined with results as follows:-

15 cases moderate flexor response.

3 cases extremely brisk flexor response.

10 cases flexor response with difficulty.

7 Plantar reflex absent.

We find that in not a single case was the extensor response present, and Buzzard maintains that absence of the plantar reflex is highly suggestive of functional disease. Flexor response is however compatible with organic disease.

(c) Distinct Nystagmus.

According to Soques, Starr and Allchin this symptom is never present in hysteria, there may be however slight jerky movements but not the true nystagmus.

(d) Paralysis in hysteria is usually of the flaccid type, whereas in disseminated sclerosis the paralysis is more often spastic and the loss of power is only moderate.

(e) Special senses.

Loss of sense of smell and taste and perversion of sense of hearing aid in the diagnosis of hysteria.

(f) Organic Reflexes.

In functional disease there may be retention of urine and constipation, but incontinence of urine and faeces never occurs.

(g)/

(g) Persistent Ankle Clonus, this is highly suggestive of organic disease.

(h) The Stigmata of hysteria, but in such cases we must remember that hysteria may occur along with disseminated sclerosis.

(i) The history of the case. It the patient has never appeared hysterical but suddenly complains perhaps of weakness in one limb with diplopia, these symptoms in such a case are not suggestive of hysteria, if at the same time the patient has a typical Babinski the diagnosis is almost certain to be that of disseminated sclerosis. In every case we must consider the history and symptoms together and by that means are much more liable to come to a correct diagnosis.

2. CEREBELLAR AND EXTRA CEREBELLAR TUMOUR.

A case of disseminated sclerosis with classical symptoms and one of cerebellar tumour with classical symptoms are quite easy to differentiate. It is however sometimes extremely difficult to diagnose a case of disseminated sclerosis of the cerebellar type. Both may have giddiness, nystagmus, optic atrophy, staccato speech, tremor, and exaggerated deep reflexes.

The symptoms to which special attention should be paid are

(a)/

(a) History of the case. The remissions and relapses are so very characteristic of disseminated sclerosis, whereas in tumour with increasing intra-cranial pressure the symptoms gradually progress.

(b) Paralysis. In tumour, symptoms are more likely to be hemiplegic, whereas in disseminated sclerosis paraplegia is more common.

(c) Optic neuritis is exceedingly common in tumour and rare in disseminated sclerosis and when it does occur in the latter disease it is never of the variety of choked disc. Buzzard in the B.M.J. 1893 says that he has never seen the usual optic neuritis or papillitis in disseminated sclerosis.

(d) Optic atrophy.

In tumour, if optic atrophy is present it is always secondary, whereas in disseminated sclerosis the atrophy is always primary.

(e) Tremor.

This occurs in both but in tumour it differs in one great principle. The movement does not take place entirely in a lateral direction from the axis line. Again in tumour the tremor has not quite so marked the other characteristic of the intention tremor, (i.e.) immediately before the object of the movement is attained there is no great increase in the tremor as is seem in a typical tremor of disseminated sclerosis.

(f)/

(f) The symptoms of tumour are due to intracranial pressure which is ever on the increase terminating eventually in coma. Hence if in doubt we can withhold our diagnosis for some time, which however should be made as soon as possible as if there is a tumour of one of the lateral lobes of the cerebellum, operation should most certainly be advised.

3. SPASTIC PARALYSIS.

Including primary lateral sclerosis, spastic diplegia or birth palsies, secondary spastic paralysis and hysterical spastic paraplegia.

Byrom Bramwell says that a spastic paraplegia in youth is the commencement of disseminated sclerosis. If we wait and watch a case perhaps for years we find that ultimately in the vast majority the classical symptoms of disseminated sclerosis appear.

(a) Primary lateral sclerosis.

In the early stages it is sometimes impossible to differentiate a case of primary lateral sclerosis from disseminated sclerosis. The history in some cases will help considerably as primary lateral sclerosis is most frequently a familial disease.

(b) Spastic diplegia or birth palsies.

The patient appears well at birth but in a short time symptoms develop and it is often obvious that not only is there spastic diplegia but idiocy is also/

also present. In other cases there is a marked history of difficult labour usually breech presentation, forceps cases or premature labour. Again disseminated sclerosis is extremely uncommon at this age.

(c) Secondary spastic paralysis.

The vast majority of these are cases of disseminated sclerosis cloaked under the name of chronic myelitis, meningo myelitis etc.

Other causes such as spinal caries and tumour do occur but the cause in these cases is often obvious.

Limitation of the symptoms to the lower extremities and early advanced involvement of the sphincters suggests spastic and spinal paralysis. The same symptoms together with sensory irritation symptoms if the myelitis be due to pressure, will exclude disseminated sclerosis.

(d) Hysterical paraplegia.

The special symptoms mentioned in the differential from hysteria
In addition
Ask the patient with paraplegia to try and lift one leg off the bed, (this usually can be done with one leg to a slight extent) at the same time carefully watch/

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ever occur in disseminated sclerosis. In the hereditary ataxia the knee jerks are almost invariably absent, this is rare in disseminated sclerosis.

(b) Heredo cerebellar ataxia.

Described by Marie, occurs after the age of 20. It is most difficult to distinguish from disseminated sclerosis.

Apart from the pathology the family history is the one distinguishing feature.

Other symptoms which may help are mental deficiency, failure of the pupil reaction and increased myotatic irritability.

The history of remissions and relapses and the mode of onset if characteristic of disseminated sclerosis will help considerably the diagnosis of that disease.

6. GENERAL PARALYSIS OF THE INSANE.

The history of preceding syphilis (which is present in nearly 75 per cent of cases of general paralysis) and the Argyll Robertson pupil are very suggestive of general paralysis.

Byrom Bramwell has more than once stated that a patient with Argyll Robertson pupil was suffering from locomotor ataxia or general paralysis of the insane/

insane or was a candidate for one of them.

Again the profound mental trouble and the grandiose ideas do not occur in disseminated sclerosis.

The tremor of general paralysis is much finer than that of disseminated sclerosis and is rather a tremulousness than a vibration. The tongue, lips and facial muscles being particularly involved.

7. CEREBRAL SPINAL SYPHILIS.

Sach in his critical digest says that disseminated sclerosis may be confounded with other diseases, but above all with Cerebral spinal syphilis.

Multiplicity and irregularity of the lesions, remissions and relapses, apoplectic seizures are all common to both.

The history of syphilis with papillary changes such as immobility and irregularity of contour are very suggestive of cerebral spinal syphilis.

The presence of nystagmus, intention tremor, and scanning speech, which rarely occur in syphilis of the brain and spinal cord, make the disgnosis of disseminated sclerosis most probable.

8. LOCOMOTOR ATAXIA.

The differential diagnosis is usually not difficult/

difficult.

In tabes

Lightening pains are very common.

Argyll Robertson pupil always present.

Knee jerks are absent.

The characteristic gait.

In disseminated sclerosis.

Lightening pains are very rare.

No Argyll Robertson pupil.

Knee Jerks usually exaggerated.

Nystagmus and intention tremor very frequent. Cases of disseminated sclerosis with lightening pains, loss of knee jerks, gastric crises are difficult but the absence of the Argyll Robertson pupil and the presence of intention tremor and nystagmus reveal the diagnosis.

9. APOPLEXY.

The apoplexy of disseminated sclerosis is never preceded by such premonitory symptoms as occur in cerebral apoplexy, but is usually of very sudden onset.

In cerebral apoplexy the temperature is first depressed and then alightly raised, whereas in the apoplexy of disseminated sclerosis, the temperature is always elevated. The hemiplegia of disseminated sclerosis/

sclerosis is nearly always of a transient nature and differs materially from hemiplegia following a cerebral apoplexy.

Time in every case will enable us to make a diagnosis, as sooner or later if the case is one of disseminated sclerosis one of the classical symptoms will appear.

10. ACUTE ENCEPHALITIS.

The previous history of the case is of great value in distinguishing these diseases. Acute encephalitis arises from injury, certain intoxications and malignant fevers. In severe cases the symptoms sometimes resemble a bad case of typhoid fever with symptoms as vomiting, delirium and coma. The local symptoms are those of a hemiplegia apparently arising from a more or less localised disease of the pons and medulla. The result is a hemiplegia alternans or cruciate (i.e.) leg on one side and the arm on the other side being paralysed. This condition rarely if ever occurs in disseminated sclerosis.

11. PARALYSIS AGITANS.

The age incidence of paralysis agitans is much later than that of disseminated sclerosis.

The/

The tremor of paralysis agitans is rhythmical less ample vibration, checked rather than increased by voluntary movement purposive and reflex. It is frequently confined to one arm for many years before finally commencing in the other.

The peculiar aspect of the face with festinant gait are distinctive of paralysis agitans. On the other hand the exaggerated reflexes, the presence of nystagmus optic atrophy, Babinski and the fluctuating history settle the diagnosis as that of disseminated sclerosis.

12. TOXIC TREMORS.

The effect of tobacco, alcohol, lead, mercury arsenic and opium.

These tremors are all usually of a fine variety, although in some cases tremors of larger amplitude are seen in the case of alcoholics. They all resemble more the tremors of paralysis agitans, and are not increased by voluntary movement nor have they the other characteristics of the tremor of disseminated sclerosis.

They are usually accompanied by cachexia and anaemia but seldom with any symptoms which occur in disseminated sclerosis.

13. CHOREA.

The disease is of an entirely different nature from disseminated sclerosis and is chacterised not by a tremor, but by certain movements which Professor Wyllie has described as twisting, wrigglings, shruggings and grimacing. The other differences are so manifest that they do not require any comment.

14. SYRINGOMYELIA.

The preservation of tactile sensibility with abolition of heat and cold sensation are alone enough to diagnose a case as syringomyelia. In addition in syringomyelia we frequently note the presence of lateral curvature.

15. AMYOTROPHIC LATERAL SCLEROSIS.

Both amyotrophic lateral sclerosis and disseminated sclerosis are characterised in the later stages by paralysis and wasting, but there is this essential difference. In disseminated sclerosis the paralysis precedes the atrophy.

In amyotrophic lateral sclerosis the atrophy precedes the paralysis.

16. PSEUDO DISSEMINATED SCLEROSIS.

Westpal has described this disease which he says cannot be distinguished from disseminated sclerosis except/

except by the condition of the optic discs.

Starr in his book on organic nervous diseases states, that the mental symptoms, delirium and apathetic state appear early in the course of the disease. The tremor is slow and occurs during rest. He also lays stress on the absence of nystagmus and optic atrophy.

Strumpel considers the disease to be a neurosis.

Marie and Charcotis school call all these cases hysteria.

The pathology of this condition so far is extremely indefinite, in fact nothing has been found. This fact rather suggests that the disease is in reality hysteria.

I can find no mention in literature to the presence or absence of the extensor toe reflex in this condition. Its presence would certainly exclude hysteria.

Another form of pseudo sclerosis occurs as a result of malaria.

17. SUBACUTE COMBINED SCLEROSIS.

Although an extremely rare disease, yet it so closely resembles disseminated sclerosis that I propose to give a short account of its symptoms, and the notes of a case under the care of W. B. Warrington, F.R.C.P., Liverpool which I was fortunate enough to see.

ETIOLOGY. It most frequently occurs in women about the time of the menopause. The causes ascribed are anaemia, toxic, syphilis alcohol and prolonged suppuration.

SYMPTOMS. It consists of three stages.

(1) Spastic ataxia of the lower limbs with subjective sensations of numbness and tingling..

(2) The onset of this stage is usually abrupt sudden paraplegia, loss of muscle sense and anaesthesia. Girdle sensation and pains in the lower extremities.

Knee jerks are exaggerated. Ankle clonus and extensor toe reflex both present.

Sphincters unaffected, irregular elevations of temperature.

(3) Sudden development of flaccid paralysis, marked hypotonus and absolute anaesthesia. Knee jerks absent, no ankle clonus. Incontinence of urine and faeces, cystitis, muscles waste, oedema, pyrexia, bed sores, mental weakness. Nystagmus may be present.

Patient dies of syncope usually within 3 years.

Risien Russell gives the following symptoms on which to make a differential diagnosis.

DISSEMINATED SCLEROSIS./

DISSEMINATED SCLEROSIS.

Earlier age incidence. Emotional tendency with functional manifestations. Remissions and relapses, optic atrophy, pronounced nystagmus. Sphincters suffer early but slight.

SUBACUTE COMBINED SCLEROSIS.

Lancinating pains, anaesthesia, pyrexia, anaemia, cachexia and wasting. Sphincters suffer late but severe.

Case under the care of W. B. Warrington, F.R.C.P. Liverpool.

A.S. woman age 48.

Married. 5 children. 2 dead.

History. Healthy until the change of life, which took place 6 months since.

Never had any injury. Scarlet fever when a girl, influenza about 12 years since. No miscarriages and no dead born children. Menses normal until the change of life. About 2 years ago patient first felt tingling in the hands, at this time she was nursing a sick child and could not get sufficient rest, the tingling has continued until the present time. About 1 year ago she felt as if she was walking on a sponge, and her feet and legs began to tingle, difficulty in walking occurred and she had to/

to use a stick, otherwise she would have fallen. Later, she had severe vomiting but no haematemesis and no melaena.

Present condition. Anaemic and cachectic,no enlargement of the stomach, no pain over the vertebrae.

Nervous system. Quite unable to stand, even when supported, but as tested in bed the power is fair. No distinct muscle group paralysed or wasted, limbs are markedly ataxic and sense of position is almost completely lost. Heel to knee test badly performed. There is marked hypotonus of the thigh muscles.

Knee jerk absent.

Ankle jerk absent.

Typical extensor toe reflex.

Abdominal and cremasteric reflexes are equal and brisk.

Cystitis, but no incontinence of urine and no rectal trouble.

Slight tremor in the upper limbs increased towards the end of the movement like disseminated sclerosis.

Occasional irregular elevations of temperature.

Complains of tingling in the hands and feet, shooting pains in the legs, has a numb pain around the waist.

Distinct but slight anaesthesia on the soles of the feet and outside of the legs also posterior surface of the legs and thighs.

Blood. /

Blood. Haemoglobin 75 per cent.

Red blood corpuscles 3.600.000

White blood corpuscles 2.800.

No poikilocytes and no nucleated reds.

Pupils are equal and react to light.

Vision normal, optic discs normal.

The differential diagnosis in this case rests on the following symptoms.

(1) Age is late.

(2) Anaemic and cachectic.

(3) Sense of position almost completely lost.

(4) Marked hypotonus of the muscles.

(5) Abdominal and cremasteric reflexes equal and brisk.

(6) No nystagmus

(7) Cystitis without any other bladder trouble.

(8) Shooting pains in the legs and girdle sensation.

(9) Irregular elevations of temperature.

(10) Optic discs normal.

I wish to lay particular stress on the following points.

a. Sense of position in disseminated sclerosis is rarely interfered with.

b. Abdominal and Cremasteric reflexes equal and brisk. Byrom Bramwell as I have stated attaches great importance to their absence in disseminated sclerosis.

c./

c. Cystitis. In disseminated sclerosis this is very uncommon, but what is more usual is slight trouble as retention or precipitate micturition.

d. Irregular elevations of temperature.

e. Extensive, but slight anaesthesia. When anaesthesia occurs in disseminated sclerosis it is frequently due to superimposed hysteria, hence it is widespread and often accompanied by analgesia.

f. Optic discs normal. This is the most characteristic distinguishing feature.

g. The presence of anaemia and cachexia.

To emphasise the great difficulty in diagnosis I add the notes of a case of disseminated sclerosis which very closely resembles subacute combined sclerosis.

L.H. girl age 20

Family History - nil.

Personal History. Birth easy. Measles when 5 years old, influenza 11 years ago, ill for 3 weeks, but completely recovered.

When 13 years old began to complain of pain in the feet, continued for a year off and on, patient next complained that her feet felt heavy and were frequently cold and blue.

When 15 years old, she contracted a cold and went/

went to bed. At the end of a week she attempted to get up, but was unable to walk. In 3 weeks time however power in the legs had quite returned. Continued well for one year and then began to complain again of numbness and spoke of stiffness in the left knee. She also had severe headache and was exceedingly nervous. Soon afterwards was quite unable to walk legs being markedly spastic.

Present condition.

Poorly developed girl, very emotional, has occasional headache, emaciated, unable to walk and there is marked contracture of the hamstring muscles. Limbs quite flaccid. Suffers from coldness of the feet and legs which are said at times to be blue. Quite a definite girdle sensation.

Reflexes. Knee Jerk, Ankle Jerk, Ankle Clonus } all absent.

Left plantar reflex is an extensor response. Right plantar reflex is first a rapid flexion then a slower but less marked extensor response.

Wrist Jerk, Triceps Jerk, Jaw Jerk } all absent.

Superficial/

Superficial reflexes are very brisk.
Organic reflexes. Patient has occasionally had incontinence of urine, also retention, but catheter has never been necessary.
Muscle power. All groups are feeble, particularly noticeable in the left ilio psoas. Sense of position is good.
Slight ataxia of the legs.
Sensation to touch by the head of a pin is quite absent in the lower limbs, but pin point is usually tardily recognised. In the upper limbs and trunk sensation to touch is also absent but to a pin point more rapid than in the lower extremities. Sensation to heat and cold is normal.
Hands visibly tremble during excitement like the tremor of paralysis agitans.
Slight intention tremor of both upper limbs elicited by the finger nose test.

Eyes. Occasional amblyopia.

Occasional diplopia.

No nystagmus.

Pupils equal, react to light and accomodation.

Optic discs. Doubtful pallor of the temporal half of the right disc.
Vision about $\frac{6}{12}$ each eye.

Colour/

Colour vision concentric diminution of the field of vision for all colours.
Speech normal.
Hearing occasional and almost complete deafness, at other times normal.
Taste distinctly impaired.

In my opinion the case was one of disseminated sclerosis with hysteria superimposed. I base my diagnosis on the following points.

(1) The history of the case is absolutely typical of what we so frequently find in disseminated sclerosis. The subjective sensations followed by paraplegia both of a temporary nature. (i.e.) Remission in its turn to be followed by relapse. Nothing is more striking about disseminated sclerosis than the history of remission and relapse.

If the case was one of subacute combined sclerosis we should expect the disease to progress in stages.

It is now 7 years since the initial subjective sensation. Risien Russell states that the average duration of subacute combined sclerosis is 2 or 3 years.

(2) /

(2) Age incidence.

(3) Emotional nature of the girl.

(4) Muscular weakness, especially noticeable in the iliopsoas.

(5) Sense of position. If the case was one of sub-acute combined sclerosis we should most certainly expect some alteration from the normal.

(6) Intention tremor slight but definite.

(7) Amblyopia and diplopia.

(8) The absence of anaemia, cachexia, lancinating pains, irregular temperature, and lastly the absence of advanced and serious bladder trouble.