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NEUROLOGICAL LANDSCAPE*

by TARIT KUMAR GHOSH, Calcutta

Last year at our Annual Conference at Poona amidst a distinguished gathering and a picturesque scenery, the Presidential address of Neurological Society of India was delivered by me although I had assumed this Office a day before.

There, at our Annual meeting, it was decided, with good reasons that the President should speak at the end of his term and not at the beginning.

Indeed, it is an act of ungratefulness for the President on entering his Office, to fire salvos at defenceless members and disturb the social atmosphere of the Conference. However, in view of the honour and worry he is supposed to carry and the fact that he will be speechless and inocous in the Society for the rest of his career, members are tolerant enough to allow him, at the end of his term, demonstrate a spell of magnificent dance of his brain potentials for a day and then, to sink eternally into post-speech exhaustion and oblivion.

This apologetic pre-amble was necessited to answer your questioning look in finding me once more in this disturbing role.

After expression of this barren regret, I found myself searching aimlessly for a topic. Indeed, it was a great difficulty to make a beginning. I was not worried about how to end. For, I can any moment say thank you and take my seat amidst generalised clapping. I have an impression that these movements — ' clapping ' — are made primarily to release the tension of muscles, and incidentally to approve of the termination of the speech, during which courtesy compelled one to remain immobilised. What a strain on the 434 muscles with 62,000 miles of capillaries and 250 million muscle fibres ! .

And at the end of these speeches, I am certain to be greeted enthusiastically for my excellent oration and I shall smile in return. For, my speech will be mixed up with other stimulating addresses of the distinguished Presidents of other participating societies, delivered from the same platform this evening, and heard in drifting drowsiness.

But what should a President tell the members and how should he begin ? . An easy escape in our country is to catalogue, however irrelevent, some faults of the Government of the day and in a triumphant voice emit fire and foretell its doom. This might restore wakefulness to the gathering and improve the status of the speaker to his audience and specially to the condemned Government. But this method is too stale and uninteresting to an academic society as ours. He can on the other-hand sing and shout, enthusiastically about Neurology as the most scholastic and intellectual speciality in the world of Medicine, and express profound regret for way ward workers devoted to other fields of Medicine. But, it will be against our basic concept of Neurology as a team work — dynamic and collective — enriched by merger of men and ideas from different branches of medical and basic science.

In that confused search for a subject, I suddenly thought of my previous Presidential speech. I have several copies which I collected from the floor of the auditorium of Poona after my learned oration.

I read it and regretted that I had not consulted it before. I had stated (but missed

*Presidential Address delivered at the Third Annual Conference of the Neurological Society of India held at Calcutta on 20-2-'54.

it) that it is the function of a President to deliver a long and learned address and to read and brood over the same all through the year. In that speech, I had tried to clear up recurring misunderstanding concerning specialization in general and Neurology in particular. Creative Neurology was the theme of my talk.

I confessed near the end of my speech that I had become 'Neurosophical' in my thinking. For, I could not help it, looking at the limitless landscape in Neurology with its widening horizon.

May I not, this evening, invite you to this enchanting realm named Neurology?. I feel, I am not handicapped by the wisdom and restraint of an expert. I may act as a teller and leave it to you to choose your own in this expanding homeland.

The landscape stretches up, if we look back, in dim distant, and out of sight towards the origin of human thought. As we sweep our gaze, we find the region is dotted with small and large towns and roads rugged and unfrequented, lead on to them. If we try to look forward and strain our eyes, a magnificent lay out of well planned cities meets our gaze. Then the road runs into the distant glow of fascinating and prosperous areas of future progress and hope of humanity.

The first hamlet we enter is Neuroanatomy. In the past, the bizarre map of this place as prepared by architechtonics was more of fiction than facts and had damped the spirit of many new entrants to Neurology. Some of the massive small mounds that looked more like mauseleums than dwelling houses, are being replaced by habitable ones. Simpler and understandable sterioscopic neural models are being built. These have been made possible because of information obtained through Cathode Ray Oscilloscope, Steriotaxic machine, and experimental degeneration techniques. It needs no reminder to Neurological specialists that Neurology rests and thrives more than any other branch of medicine on an accurate and sound knowledge of Anatomy.

Near by, is a workshop town inhabitatec by men who look learned but distant They use a coded language—monosyllabilic —and write in short hand difficult for hard headed man like me. Among, themselves they are quite happy and communicative and seemed to hold many secrets, thanks tc their chemical and electrophysiological tools. If you can just manage to attract their attention and wrench them from the rigors of experimentation that they have set, you will hear them tell astonishing tales about us. They are the Neurophysiologists and we should not disturb them in their work. They are at the moment particularly interested in tilling near, the borderland, the hard grounds of Psychology with Neurological tools. The work seems to be fruitful, the yield satisfactory and merger of Psychology to Neurology can almost be said to have begun.

We might just wander into the showy city of Neurosurgery. There are only a few residents. Their work is most exacting and strenuous. But they carry a tradition of courage and coolness. This is the newest surgical speciality which has its roots in antiquity. About 5000 years from now Neurosurgery made its debut but remained stagnant until the twentieth century Better diagnosis, anaesthesia, and haemostatic facilities have made it blossom forth with all its brilliance. There had been numerous varieties of operation, but tumour and disc surgery had the largest number of adherents. The prehistoric man tried to let out evil spirits; modern Neurosurgery is embarking on a remarkable voyage to Psychosurgery — to control the agitated and depressive states of mind. What would interest you most is the magnificent service, it is rendering to Neurology by opening the gateway to Brain for eager workers from neighbouring areas of Neuroanatomy Neurophysiology, Neuropathology, Neurochemistry, Electroencephalography and Nuclear Physics.

A linear, rather lean, town of Neurology runs parallel to the vast throng of neurologically afflicted. There is admixture of old and new persons and premises in the

curious town, whose function is to offer neurological service to the patients. Some of the old inhabitants were masters of arts and superb in painting of neurological maladies. Some had affixed their name to the neatly tied bundles of sufferings and findings of patients. A few with evident pleasure are trying to label those diseased and acting as curio collector. Others are preoccupied with classification of strange diseases of unknown causes and unmodifiable course. It seemed the older portion of the town had bad days. Some are living as poor relation to Neurosurgeon or are leaving for a home in the prosperous city of Psychiatry. Things seems to be better in the newly developed areas. Newcomers are functioning in Neurological medicine, in neurological complications of diseases of other systems of the body and are sharing the responsibility and anxiety of his colleague, the over worked Neurosurgeon.

Near the romantic modern city of Neurosurgery and the old but rebuilt town of Neurology, are new diagnostic colonies Neuro-Pathology, Neuro-Radiology, Neuro-Ophthalmology, Biochemistry and Nuclear Physics. The inhabitants had their apprentice days in their basic subjects but have since then transferred their interest to Neurology. They are continuously collecting valuables from their original fields to improve the candle power of their torches to illuminate the neglected and ill understood neurological ills of mankind. They are waiting handy for a call by clinical neurologists and neurosurgeons to decipher the problems presented by patients. But they have no glamour around them. They deserve more than our passing attention for their silent and useful service.

In that developing area of diagnostic colony, is a queer looking place. The original frame work could be plainly seen to be made by a crank, whose premise was disbelieved and disowned by his friends. But he went on building impervious to criticism and neglect. One day, he received the seal of approval and distinction from the authorities. And there is a rush for rooms in his little town, from different lands — Physics, Electronics, Mathematics, Clinical Neurology, Neuro-physiology, Psychology. And more are coming.

They are engaged in coding the heirographics of Brain waves, which have been named after Greek alphabets, alpha, beta and delta for they are mostly Greek to us. Development and improvement of technique, amplifiers and valves, — have contributed largely to the remarkable and rapid growth of this town. It is not the form or pattern of these waves but their nature and significance that are now actively engaging the attention of this dynamic group of varied interests.

Near the end, is an unfinished village of therapy and rehabilitation. From Mechanical, Electrical Engineering, Psychology and other places, settlers have arrived to work as Physiotherapist, Social workers and Psychologist. They are helping rebuilding the deformed and diseased persons and destroying the therapeutic nihilism which had deterred the progress of Neurology. In fact they are rehabilitating Neurology.

We should not miss another interesting plot of land bordered by Arts, Science and Medicine. From Economics, Electro-mechanics and Neurology, travellers are coming to work on theory of information, transmission system and logical processes at this place. It is a site of great potentiality. It will equip us to increase the range of our physical and mental powers and release us from the slavery of numerical calculation, accountancy and statistics, that could be operated by machine leaving us an outlet for imagination, initiative and creativity. It will improve methods of communication and will lead to world unification. This region is named Cybernetics, which stands for 'the art of government'.

I realise it is too late to travel further. But it is fascinating to watch how one by one lights are lighted in our dark homeland.

We feel reflective about the future of Neurology.

I believe that the Neurology of the future will draw a very larger number of workers

from Medicine and allied Science. It will attract pioneers explorers — persons of courage and vision — rather than sedate settlers. It will act as a bridge of light between Science and Religion, and dismantle the regrettable concept that Religion must be disowned before entering the portals of Science.

We are living in a perplexing age. It has been called an 'age of crisis', for certain world events have made us lose our precious heritage of conscience. It has been named as 'age of noise', for noise attracts people and is unavoidable whether at home or outside. It has been said as 'age of disturbances' which is now days so common place and some persons and groups are thriving on it. We feel tempted to term it 'age of Neurology' for I believe Neurology is destined to make a significant contribution to the understanding of man and his works.

Evolution of man has halted at the 'biological sphere' but is at work in the 'artificial sphere'. Man is now more than a giant of wildest dreams. Human senses have increased their extensiveness through various tools that might be termed artificial organs. Magnifying glasses, optical instruments, electron microscope and acoustic appliances enabled the human being to amass a wealth of information unknown in his unaided days. Though modern tele-transmission-communication system, he can see and hear from a considerable distanc He has also greatly increased the power o his limbs. The first step he did was by usin levers and the second was by having non human source of energy — machine of tre mendous power. He also lengthened hi arms to an unbelievable extent by tele communication instruments. He has sepa rate artificial reflex centres servo mecha nical organs — electromechanical appara tuses — such as automatic aircraft piloting He has constructed calculating machin which release him from long and compli cated non creative mental processes.

Technological evolution has created a nev being — a biochemical unit constituted b man and instruments.

Science is equipping him with constan and continuous addition to his artificia organs and to increase his power.

Neurology must found the 'how' an 'why' of him. And what is happening i Human Brain which has not increased i size for several thousand years and has n such possibility in future.

It is, therefore, incumbent on us Neurologists to try to understand the neural pattern of his behaviour and mode of functioning of Brain of this modern man of growing stature and how best to enshrine a spirit o sacredness and reverence of life in him.

On this significant evening, we dedicate under God to that end for a new, creative and harmonious era of human history.

PARAPLEGIA DUE TO TUBERCULOUS GRANULOMA (TUBERCULOMA) OF THE SPINE RESEMBLING AN INTRASPINAL TUMOUR*

(A Case Report)

by R. G. GINDE and D. D. BANKER, Bombay.

Paraplegias due to tuberculous disease of the spine have been of interest since Percivall Pott described the bony lesion and its effects on the nervous system in the latter part of the 18th century. Elsberg (1942) mentions the incidence of paraplegia as 3 to 18% of all cases of tuberculosis of the spine. Girdlestone and Somerville in their recent monograph (1952) put it around 10%.

In the typical case, the development of symptomatology in a child or a young adult leading to a paraplegia hardly leaves any doubt about the cause of such paralysis. The spinal cord symptoms have been ascribed to edema of the cord or pressure by tuberculous granulation tissue or a cold abscess enchroaching on the spinal canal or a large sequestrum. Sometimes, it is the result of partial dislocation of the vertebrae or tuberculous pachymeningitis. Rarely, it follows vascular changes in the cord when unfortunately the paraplegia remains irreversible. Even actual tuberculous involvement of the cord has been described. But, it is very rare indeed for the bony deformity itself to produce compression of the cord even in cases with a severe degree of kyphosis.

Recently, a case has come under our observation where the symptomatology and other findings were like those of an intraspinal neoplasm.

CASE REPORT

Mrs. M. C. (K.E.M.H. 53 18138), a housewife of aged 40 was admitted on December 10, 1953 for

(i) inability to walk for 1½ months,

(ii) tingling and numbness in both the lower limbs 1½ months,

(iii) difficulty in voiding urine — 2 weeks.

Her complaints started about 6 months previously with pain in her right scapular region. 6 weeks later this was felt in the middle of her back. 3 months prior to her admission, her pain started radiating to the epigastric region. However this lasted for 2 weeks and then it disappeared. A month later, she started getting tingling and numbness in both of her legs. Soon, she found difficulty in lifting her legs and in walking. Since 2 weeks prior to her admission she was unable to walk and was bedridden. She also experienced difficulty in voiding urine and became constipated.

There was no history of a fall or injury. She denied any major illness in the past. She had 5 children. Her husband and all children were in fairly good health. She had amenorrhoea for 6 months due to pregnancy.

On examination, she was a rather short, slightly anemic middle aged woman unable to walk even with support. Tonsils enlarged, T. 97 F, P, 88, R. 26, B.P. 90|50. Her cardio-vascular and respiratory systems were normal. Uterus was enlarged just above the umbilicus. There was no edema of the feet.

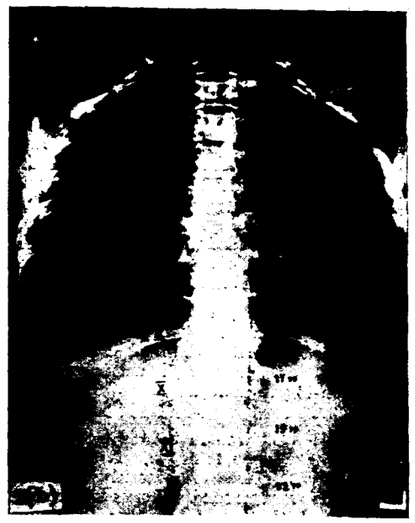
Neurological examination revealed that her higher functions, cranial nerves and upper limbs were normal. In her lower limbs power was 40 to 60% of the normal, the left leg showing greater amount of weakness than the right. There was spastically, and slight wasting of the calf muscles but no involuntary movements. The sensations of touch and pain were impaired to a moderate degree upto the level of L_1 on both sides including the perineum and slightly upto the epigastric region. There was no zone of hyperaesthesia, nor any sparing of the sacral area. Position and vibration sensations were also impaired upto the level of the anterior superior iliac spines. Her abdominal reflexes were lost in all the four quadrants with bilateral Babinski. She had marked hyper-reflexia in her lower limbs with bilateral patellar and ankle clonus. She also had retention of urine and she had to be catheterized 8 hourly.

By December 21, 1953, the power in her feet and legs had diminished to 40—20% and she was getting flexor spasms.

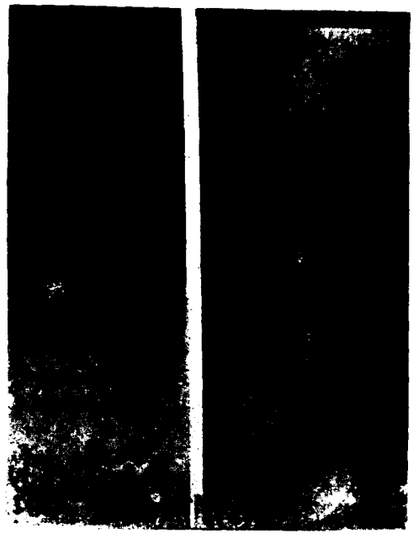
Laboratory investigations.—Urine and Stools: normal. Blood: 4,160,000 red blood cells per c.m.m. with 11.0 grams of hemoglobin. 6,600 white cells per c.m.m. with 60% neutrophils, 5% eosinophiles, 30% lymphocytes and 2% monocytes. E.S.R. was 63 m.m. per hour (Westergreen technique).

X-Ray chest and fluoroscopy did not reveal any abnormalities. X-Ray of the thoracic spine showed a complete absence of the pedicle of 7th thoracic vertebra on the right side with some localized rarefaction of the body of T7 without any vascularity, abnormal calcification or a soft tissue mass. There was no diminution of the intervertebral disc spaces. Lumbar puncture was done on 23-12-53

*Paper Presented at the Third Annual Conference of the Neurological Society of India held at Calcutta on 21-2-'54.



X-Ray of the thoracic spine showing measurements of H.I.D. in mm. Note the destruction of the 7 Rt. pedicle of the 7th thoracic vertebra (marked with an arrow).



Complete arrest of the Pantopaque at the level of the 7th thoracic vertebra in A.P. and Lateral views.

and manometric studies revealed a complete block to the flow of C.S.F. The spinal fluid was clear, proteins 70 mgm.% globulin increased and it contained 6 lymphocytes per cu.m.m. chlorides were 700 mgms.%. Myodil myelogram with 3 c.c. showed a complete block at the level of the 7th thoracic spine with not a very sharp capping suggestive of an extradural lesion. Cistern puncture on 24-12-53 also showed a hold up of the oil at the same level. The cisternal fluid was clear, contained 20 mgms. of protein and no cells.

A pre-operative diagnosis of an extradural tumour probably of the nature of a neuro-fibroma was made in view of the persistent history of pain, localized to the right scapular region and back and radiation to the epigastric region followed by progressive paraplegia with destruction of the pedicle and typical myelographic findings.

She was operated on 29th Dec. 1953 (by R.G.G.) under intratracheal $N_2O + O_2$ anaesthesia by posturing her in the left lateral position because of her advanced pregnancy and a right hemilaminectomy was done. The laminae of T_6 and T_7, had become very thin by pressure. At T_7 level a brownish tumour mass partly encapulated was found lying by the side and in front of the spinal cord extradurally. The tumour mass was very firm and was removed piece meal by biopsy forceps when it was found extending antero-laterally towards the posterior mediastinum. About 90% the tumour was removed, leaving behind a small portion which was entering the posterior mediastinum. The surgical specimen weighed 9 grams. The dura was not opened as a thorough decompression of the cord which, by then showed pulsations, was achieved. She received 250 c.c. of blood and 500 c.c. of 5% glucose saline during the operation which lasted for 2½ hours and stood the procedure well.

Histopathological report (D.D.B.) 13-1-54: The material consisted of small greyish brown bits of bony tissue. These weighed 9 grams. Several blocks were prepared after decalcifying the bony bits. The sections were stained by routine Hematonylin and eosin stain and also by modified Ziehl-Neelson's method for acid fast bacteria.

The H and E sections showed bits of osseous and cartilaginous tissue surrounded by dense inflammation, in which were seen foci of caseation and follicles containing Langhan's type of giant cells, epitheloid cells, and chronic inflammatory cells made up chiefly of lymphocytes. The changes were typical of tuberculous inflammation. Acid fast organisms were seen in the specially stained sections.

Post-operative course: She started showing improvement very soon after the operation. On

Tumour like masses removed at operation.

Shows the typical structure of the granuloma with caseation, round cell infiltration, and Langhan type of giant cells.

Bone and cartilage infiltrated with chronic inflammatory cells.

31-12-53, i.e. 2 days later, the patellar and ankle clonus were not well sustained. She had normal control over micturition. She voluntarily said that she now was able to appreciate her "baby's" kicks in her abdomen. Power showed distinct improvement to 50 to 60% of normal. On 3-1-54, she could appreciate touch all over, but hot and cold as well as pain were impaired below the knee. Vibration sensations were still lost and her position sense was impaired as before the operation.

The wound healed by primary intention by 4-1-54. On 6-1-54, the sensation of heaviness and tingling was persisting only below the knees. She was now able to lift up either legs off the bed and even against slight resistance. Patient started walking with support on 16-1-54 and is having regular physiotherapy. On 20-1-54, her E.S.R. was 48 m.m. per hour (Westergren). Since 12-2-54, she has been walking without support. Her position and joint sensations have not yet fully recovered but motor power is nearly 80% and she still has hyper-reflexia with illsustained ankle clonus on both sides.

She received 9 grams of Streptomycin and 6 million units of Penicillin from 25th December 1953 to 3rd Jan. 1954. Intensive anti-tuberculous treatment was started only after the nature of the disease was established from Jan. 14, 1954. Till Feb. 17th, she has received 25 grams of dihydostreptomycin. 8—9 grams of Isonictonic acid and 174 grams of P.A.S.

COMMENTS

The evolution of symptomatology in this case was like that of an intraspinal tumour of the extradural type except for the relatively short history. There was nothing in her history or in the physical signs to suggest either a latent or active tuberculous infection in the spine or in the other parts of the body. She was not running any fever, nor did she have any Techycardia. Only her E.S.R. was high 63 mm. hours. The lesion was not suspected even from plain X-Rays of the spine. The spinal fluid findings were suggestive of a mechanical block with no inflammatory changes.

At operation, a firm nodular, brownish mass was encountered which was partially and apparently encapsulated and was invading the bone. A thoracic nerve was actually traversing through this tumour mass and part of it was found extending into the posterior mediastinum. Although a comment was made during the operation that the lesion though it apparently looked like the common extradural tumour, viz., a neurofibroma of the dumb-bell type, it was not well encapsulated, was unusually firm and showed no cystic changes inspite of its large size. The diagnosis was established finally from the typical histological features and the demonstration of tubercle bacilli.

The patient did not receive any intensive anti-tuberculous treatment for nearly 16 days following the operation during which period, her wound had healed well and she was showing improvement in her clinical condition. Her post-operative X-Rays taken on 18-1-1954, 20 days after the operation still did not show any of the typical changes of tuberculous affection of the spine.

Because of these peculiarities and its obvious variety an attempt was made to search the literature of the past 10 years and we have not come across any reference at least in the English language. We like to place on record this unusual type of tuberculous involvement of the bone, in this case the spine, and venture to designate it as "tuberculoma of the bone" following similar descriptions of such lesions in the brain.

THANKS

Our thanks are due to Dr. R. G. Dhayagude, the Dean of K.E.M. Hospital and to Dr. N. M. Purandare, Professor of Pathology, Seth G. S. M. College for the use of the hospital records, pathological reports, photomicrographs, etc., and to Drs. Chandnani and Nadkarni of the Neurosurgical service for their devoted attention in the case of this patient.

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LATENT SYPHILITIC DISEASES AND THEIR DIAGNOSIS*

by W. GRILLMAYR, Colombo.

Every medical practitioner meets occasionally patients with certain symptoms or diseases which do not quite fit into any diagnostic pattern and which do not respond to treatment sufficiently well.

When such cases are examined we find that the symptoms are usually of a vascular character, of some sensory nature, or they are of a vegetative nature. Thus there are vascular disturbances like Aortalgia and Stenocardia; sensory phenomenon, like gastric crises, and lancinating pains; and vegetative disturbances like giddiness, tachycardia, palpitation, and so on.

As there are seldom any objective findings, these patients are often not taken seriously, the more so as they frequently do not respond to any treatment. Dr. Rottmann treated these patients with a combination of Kobratoxin and Iodide, and found that such cases which had resisted many forms of treatment responded very well to Kobratoxin and Iodide, and that, at times, whilst under treatment their blood turned to a positive syphilitic reaction. It was, therefore, evident that these cases were of a syphilitic nature and the latent character of the disease had become manifest during this treatment. Dr. Rottmann, therefore assumed that the present day methods of proving the presence of syphilis were not completely satisfactory and in seeking more effective methods he tried Luotest, which at that time was known but was not in favour.

Luotest had a rather chequered progress. Its specificity was denied and it was abandoned as useless. But Dr. Rottmann felt that the problem of Luotest had not been properly investigated and hence took it up.

After Pirquet had introduced his skin test using extracts of tubercular bacilli, Meirowsky in Breslau tried to establish an analagous test in syphilis. He used pulverised syphilitic liver and got positive results in syphilitic patients. But even non-syphilitic patients reacted positively to this test. Tedeschi, Ciuffo, and many others tried similar compositions with similar results.

After Noguchi (1911) had detected the spirochaete in the brain he prepared pure cultures of the spirochaete, which he called Luetin. By inoculating it he found that in tertiary syphilitic cases erythematous papules appeared in the skin and developed their peak reaction in 8—10 days.

Fischer and Klausner produced extracts from organs which were rich in spirochaetes, and which later became known as Luotest. Inoculation with Luotest produced an Erythema in tertiary syphilitic cases. The result could be evaluated in as early as 24 hours although at times it reached a peak only in 48 to 72 hours. At this stage of research Luotest was known to give positive results in gummatous, in latest gummatous, and in congenital syphilis and in Keratitis parenchymatosa.

But both Luetin and Luotest gave positive results also in cases which were supposed to be non-syphilitic. Using a normal (non-syphilitic) organ extract as a control, Miller and Stein found that the inoculation or the normal organ extract gave positive results in the same patients who gave a positive reaction to the syphilitic organ extract.

The result of Dr. Rottmann's investigations is summarised thus: the difference between the length of the interval in Noguchi's Luetin and in the organ extract of Fischer and Klausner is explained by the fact that in the former lipoid rich spiro-

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*Paper Presented at the Third Annual Conference of the Neurological Society of India held at Calcutta on 21-2-'54.

* This article is being published for its worth in indicating the potential use of the 'LUOTEST' in the diagnosis of latent syphilis. Luotest is apparently based on sound bacteriological and immunological principle, viz., allergy of infection. It involves a highly controversial subject like "Immunity and Allergy in Syphilis."

'The term 'Island Disease' referring Latent Syphilis is felt to be particularly vague.

—*Editor.*

chaetal bodies provoke the reaction, whereas in the Loutest it is a tissue reaction which takes place. Dr. Rottmann considers the positive reaction of non-syphilitic material in syphilitic patients as anologous to the Laboratory test of the blood, where also a non-syphilitic antigen is used.

The American workers, Sherrick and MacNeil, discovered that blood WR - negative patients became positive in the Luotest-type skin reaction following administration of iodide and considered that it was a halogen reaction. But Dr. Rottmann believes that it is not a mere halogen reaction, but that the iodide acted as an antigen and stimulated the production of certain antibodies, thus increasing the intensity of the skin reaction.

Dr. Rottmann also found that at times the reaction of the repetition inoculation of Luotest was stronger than the first inoculation. In cases where the first inoculation sometimes failed to show any response, the second inoculation gave a positive result. In following up such cases it was observed that the blood WR, which had been negative, occasionally became positive in either the complement fixation reaction or the precipitation reaction, or in both of them.

This Luotest repetition inoculation with serum changeability becomes positive only in tertiary syphilitic states. It is assumed that there are in all probability syphilitic island-like foci spread in the tissue. The spirochaetes create foci which act as foreign bodies and bring the tissue into a defensive state. So the spirochaetes provoke over a long period of years, reactive foci of granulation or gummatous growths from which symptoms arise according to the localisation. These islands are so small and often so far remote from the blood or C.S.F. sphere, that they do not give a positive WR. By the introduction of the antigen (Luotest), the organism becomes sensitive, antibodies are formed, and the visible expression of the antibody-antigen reaction is a positive skin test. Dr. Rottmann calls these islands ' Herdlues ', and I have, therefore introduced this disease into English language as ' Island Disease '. It is possible that the first inoculation of the antigen gives only a negative or weak positive reaction, at the same time sensitising the organism, and the island which so far has remained below the threshold, will now produce so many anti-bodies that the repetition of the Luotest inoculation produces a markedly positive reaction. By means of the production of anti-bodies, and especially where there is a close approximation of the syphilitic foci to the blood stream, it is possible that the WR, and|or the precipitation reaction can now become positive, and similarly the C.S.F. also later. I have met two such cases, both in Ceylon. It is possible that the positive WR may be delayed until several months after curative treatment has begun.

Cases of such serum changeability in connection with the repetition inoculation are recorded by Rottman in 1948 in 7.3 per cent, by Grillmayr in 1949 in 16 per cent, and by Montzka in 67 per cent of cases.

The serum changeability must, however, not be considered a deterioration in the course of the disease, but as evidence of the increased defence mechanism which has arisen in the organism following stimulation either by Luotest or later by treatment.

It is a common experience now that the positive reaction occurs either after Luotest or in the course of treatment and that the skin reaction becomes stronger, but ultimately, with continued treatment, it turns negative. The refined and sensitive nature of the Luotest reaction is well revealed in the blood reactions, at times being first positive and then becoming negative under treatment, and then turning again positive until the island of disease is finally removed by treatment. It is then that the Luotest reaction remains negative as also as the complement fixation and the precipitation reaction, and repeated inoculation will not change these results.

The place of ' Herdlues ' or the ' Island Disease ' amongst the other syphilitic manifestation must be understood. Dr. Rottmann unites the primary and secondary syphilis as ' Infectious syphilis ' and calls it " syphilis of the blood sphere." Here the serum

is positive. From this stage of infection two modes of progress are possible. The patient can either develop tertiary syphilis, which will manifest itself as " Focus syphilis " or he can develop neuro-syphilis. In " Focus Syphilis ", the foci can either be in the aorta, when syphilitic measoartitis will be diagnosed or again it may be in the skin as tertiary skin syphilid. With these forms of focus syphilis the blood will usually be positive. In the subgroup, " the Island disease ", the small foci, are in tissues usually remote from the blood or C.S.F. sphere. They are one or more islands as opposed to the focus syphilis and the blood examination for syphilis would not give evidence of the syphilitic nature of the disease if a positive result was not available on Luotest repetition inoculation. All these islands are in the tissues as opposed to the blood and C.S.F. As they can certainly be diagnosed by Luotest, Dr. Rottmann calls this sort of syphilis, the syphilis of the " tissue sphere."

As the group of syphilitic diseases like G.P.I. and tabes affects most frequently the C.S.F. and its environment, Dr. Rottmann calls it the " syphilis of the C.S.F. sphere." Patients suffering from these diseases can be cured, yet it is possible that minor foci remain, which again are of the character of the " Island Disease ".

The " Island Disease " can be acquired. But more frequently it is hereditary. The hereditary type in Ceylon seems to be more frequent than in Europe. Probably this will apply to India as well ; I think this assumption is justified by Dr. Kutumbiah. whose article in the first number of the Journal of the Neurological Society of India suggests it, although he did not use Luotest and so far has no objective proof.

Valuable contributions about the endemic nature of syphilis have been made by Dr. Rottmann. This is a wide field of work and only an outline can be given. As far as the ' Island Disease ' is concerned we mainly have to deal with syphilis congenita tarda. Yet in infants there can be syphilis foetalis or innata, syphilis connatalis. or syphilis postnatalis. To make the mechanism of transfer clear Dr. Rottmann quotes experiments by Doerr and Seidenberg, who proved by using horse serum on guinea pigs that the static syphilitic antibodies of the maternal tissues which are fixed on the tissue of the uterus and placenta sensitise the tissues of the embryo. For an analogy, a mother might have suffered from syphilis many years ago, and be apparently cured, yet she can still come into a tertiary syphilitic state and this state is the expression of the reactivity of the organ tissue to the spirochaete. This characteristic is now transferred to the foetus in a manner analogous to anaphylaxy as a consequence of which the child of such a mother will react a priori like a tertiary syphilitic.

This new viewpoint gives an understanding of endemic syphilis. As is known, syphilis changes its character in countries where its incidence is high. The ' stormy ' and acute symptoms of the primary and secondary state are scarcely seen, although the WR may be positive. Instead of them a large proportion of the population appears as tertiary syphilitics, the descendants of whom acquire the tissue defence congenitally. Therefore, they will react to the stimulus of spirochaetes like the tertiary syphilitics. Because of the extent of syphilis and its continuous infiltration the population develops a picture of endemic syphilis, the tertiary state of which is a natural defence mechanism of the organ tissue against syphilitic infection.

In all these cases we have to deal with " Herdlues " or ' Island Disease ' which leads either to disturbances in development or becomes the cause of a continuous disease.

Dr. Rottmann's theory explains the incidence of latent syphilitic infection in many cases with occasional positive blood reports, but without any history of primary or secondary state. It is even possible that such patients will show either minimal or no symptoms in their infancy, or they will produce them only when acutely ill, in pregnancy, or in old age. As these patients are invariably innocent of having acquired

syphilis themselves, the term 'Island Disease' is all the more justified.

The symptoms of "Island Disease" are countless. In fact it is the existence of the Island Disease which proves the old saying that a negative WR does not exclude syphilis. Very frequent are symptoms from the vascular apparatus such as Angina pectoris-like attacks, cerebral vascular attacks, migraine, Menieriform attacks and epileptiod fits. More frequent are symptoms of the vegetative sphere such as Tachycardia and palpitation giddiness and gasto intestinal disturbances. Not infrequent are symptoms of the peripheral nerves: tabetic like pains, complaints like Trigeminus neuralgia, endocrine disturbances, and many others.

The treatment of this disease differs from all other known anti-syphilitic therapy. In principle these islands are made to dissolve and Dr. Rottmann calls in Allergotherapy. This is achieved by using Kobratoxin and a hexaminic iodine preparation, both given parenterally.

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SURGICAL TREATMENT OF EPILEPSY*

by JACOB CHANDY, Vellore.

Attempts to stop epileptic seizures undoubtedly began in the era of pre-historic trepanation by making a hole in the skull. In the early 19th century, surgeons began to do craniotomies for this purpose with no other therapeutic plan than to open and look with the hope of finding something unusual. Waves of surgical attacks followed on this curse of human ailments — the Epilepsy; which remained the least understood of diseases. Simple decompression; excisions of normal motor gyrus; surgical alteration of venous drainage; cauterization of meninges over the areas of cerebral atrophy; implantation of foreign bodies upon the surface of the brain; varying types of cervical sympathectomy and many other procedures, including colectomy, have been employed in the hope of bringing relief to the epileptics. Yet, in the face of critical analysis of results, except for the removal of brain tumours, the role of surgery in the treatment of epilepsy had been small. Sir Victor Horseley (1886) was the pioneer in the application of physiological principles to this problem. The development of Electro-encephalography by Buerger contributed an additional method in the study of the physiological principle. Penfield and his associates used the technique of direct recording of the electrical discharges from the surface of the brain. This method of exact localisation of abnormal electrical discharges opened up a wide field in the surgical management of epilepsy based on physiological principles and pathological findings.

From then on more definitive attack on focal epilepsy was undertaken. Earlier workers reported in pessimistic gloom on cases of surgical excision in the treatment of these cases. Cushing, Little, Foerster and Penfield, Rowe and Watts, Furlow, German and others started to report cases with varying incidence of cure after surgical ablation for epilepsy. Penfield and Erickson,[9] in 1941, reported on a study of 115 patients who were followed for 1—11 years after ablation with the result that 43% were seizure-free or had one or two attacks. 26% considered themselves 50% improved. 9% slightly helped and 22% not improved. Following this large series, Penfield and Steelman[12] (1947) and Penfield and Baldwin[7] (1950) reported on the results of further large series of various forms of focal epilepsy. During the last five years, the literature is full of reports on surgical treatment of Epilepsy.

A variety of lesions can give rise to cerebral seizures. It is the abnormal electrical discharges produced by an aggregate of neurons which are involved in these lesions that give rise to this clinical phenomena. If multiple areas are involved, especially in both hemispheres, surgical treatment becomes practically impossible. Therefore, it becomes imperative that surgical treatment of epilepsy be limited to the cases which are focal in nature, i.e. those cases in which the primary epileptogenic discharge arises from an aggregate of neurone in the cortex with or without spread of this abnormal discharges to the other areas. The common pathological entities which produce these focal seizures excluding brain tumours are Meningo-cerebral cicatrix, local cortical atrophy; local microgyri; cysts or vascular abnormalities; and conditions where pathology is not understandable. When trauma or infection has involved a local area of brain, the result is gliosis. Ganglion cells disappear at the centre of the damaged area, and at the periphery, they are subjected to abnormal conditions which eventually lead to abnormal electrical discharges. The meningocerebral cicatrices form the largest percentage in causing cerebral seizures which are amenable to surgical therapy. Birth-injury causing microgyri or encephalitis damaging only certain focal areas producing local cortical atrophy form the next large series. The common factor in all these conditions is the presence of a zone or area of ganglion cells, the circulation of which has been

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interfered with to such an extent, that epileptogenic characteristics develop. Thus spontaneous neuronal activity is due to abnormal metabolism in these areas.

Selection of proper cases for surgery is important. Careful history with special attention to the beginning of an attack gives in the first instance a clinical localization. Usually it is necessary to take the history from the patients, their relatives and friends. The aura is considered as the beginning of the seizure which may or may not progress to a clinical manifestation. If the aura alone occurs, that is considered as a minor attack. In studying the patients, often it may be advisable to watch a seisure either spontaneous or induced. Penfield and Christianson[11] in their monograph on seizure patterns have shown clearly the seizure patterns of the discharges coming from various regions of cortex. A typical single focus will give the same clinical picture always.

X-rays of the skull can occasionally give evidence of trauma or other local bone changes. E.E.G. studies of these patients are most essential to collaborate the previous findings and in localising accurately the area involved. This also makes it possible to know whether there are multiple foci and if so surgery is not indicated. Pneumoencephalograms show localised cortical atrophy and similar abnormalities. Vascular abnormalities are made out by cerebral angiography. After all these studies, these patients are given a fair trial with anti-convulsants for 2—3 months and only if seizures are uncontrollable, surgery is contemplated.

After localisation of the seizure site by all the above mentioned techniques this area is exposed. Electro-corticogram which is absolutely necessary for accurate localisation is then done. The epileptogenic area is ablated sub-pially, carefully, without damage to the adjacent gyri. Corticogram is repeated to be sure of the extent of area and depth ablated. Stimulations of the area of abnormal discharges on the cortex would often produce the same seizure.

Sixteen cases have been done during the last two years in the department of Neurology and Neurosurgery of the Christian Medical College Hospital and this paper deals with the survey of these cases.

During the last five years, 700 cases of fits were seen in the clinic. Only the cases which were suggestive of focalisation clinically, were studied further. This consisted of about 60 cases, which is roughly 8.5% of all the fits seen in this clinic. The follow-up in these sixteen operated cases has been from one month to two years. 33% had no fits after operation, 25% did not show any improvement. In the cases which showed no improvement the Corticogram had revealed extensive lesions and ablations were not carried out so extensively, either due to involvement of motor cortex or deeper structures.

Fig. 1.

Corticogram assembly in place after the exposure of the cortex. During the operation for ablation of epileptogenic area.

One case which showed 3 per second, spike and wave pattern, focalised to right frontal region, had complete ablation of this area. Post-operatively, fits recurred and surprisingly the nature of the fits was also completely changed. E.E.G. studies then showed diffuse petitmal variant discharges and larval grandmal discharges coming from multiple foci. Dr. Singh, has

pointed out that some of these discharges particularly the spike and wave pattern gives a suppressive effect on other abnormal electrical patterns. Once such a primary focus is removed these other abnormalities manifest themselves.

The rest of the cases had occasional fits but could be easily controlled with medication. As Earl Walker has pointed out patients with mental deterioration did not show much change in their behaviour after ablation of the epileptogenic area. This is in contradiction to our experience with hemispherectomies for infantile hemiplegia with fits having marked mental deterioration. In those cases obvious improvement is noted in their behaviour.

The interpretation of E.E.G. studies are of great significance in that if removal of the secondary foci produced due to the constant electrical bombardment from the primary foci, is carried out instead of the primarily involved area no improvement can be expected. It may be sometimes very difficult to differentiate the secondary from the primary if other obvious pathological changes are not present.

Hemispherectomy which should properly be called Hemicortectomy was done in the department in four cases for infantile hemiplegia. Krynauw[3] and Cairns[1] have discussed in their papers in detail, the criteria for selection of cases for surgery and the remarkable results. Patients with hemiparesis which has occurred during the first few years of life and with uncontrollable fits and progressive mental deterioration only were chosen. Plain X-ray of the skull and measurements of the extremities show that the affected side of the body had not developed as well as the other side. Pneumoencephalogram revealed marked atrophy of the involved hemisphere showing a very large lateral ventricle on the affected side with increased sub-arachnoid space. Often there was shift of the ventricular system to the affected side. This is an important factor to be considered in marking out the position of the sagittal sinus during operation.

Fig. 2.

Antero-Posterior view of the skull after Pneumoencephalography, showing very markedly dilated left lateral ventricle and shift of the whole ventricular system to the left; left half of the skull smaller than right.

E.E.G. studies and corticogram reveal very diffuse abnormal discharges throughout the affected hemisphere with much spread to the opposite side. During operation the usual finding is a much gliosed brain which has to be cut with sharp instruments for removal. Only the basal ganglia are left behind with a part of the hippocampal gyrus. By removing a large bone-flap, the major portion of the brain is exposed. The resection can easily be carried out by removing the frontal pole first after opening into the enlarged ventricles and removing the rest in one piece leaving part of the hippocampus with the basal ganglia. The Choroid plexus is cauterised to avoid excessive C.S.F. formation.

The results of operation had been remarkable. The hemiparesis never became worse but on the other hand, improved. The spasticity disappeared and bedridden children were able to move by themselves

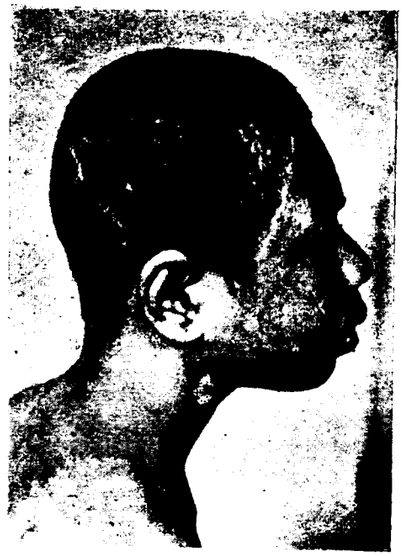

Fig. 3.

Post-operative picture of the skull after Hemispherectomy. Note the large scalp incision.

gradually. The uncontrollable fits were easily manageable with small amounts of anti-convulsants. The improvement of the mental condition may be attributable to the control of fits. Regardless of whether the removal had been the dominant hemisphere or not, children who were not able to speak started to utter a few words within a week after the procedure. The hemianopsia is not appreciated by the patient. Whether there had been hemianopsia before the operation is not possible to know because of the poor co-operation in assessment due to the defective mental state.

The type and extent of cortical extirpation necessary to eliminate epileptic focus in these cases therefore vary greatly. In some sub-pial resection of the focus was adequate. In others the epileptogenic zone involved large areas and lobectomy was necessary. In others with infantile hemiplegia hemicortectomy was required to eliminate the abnormal areas with the gliosis. In planning resection it is essential to avoid increasing the disability of the patient. As mentioned above, it is surprising how much atrophic scar tissue may be resected without impairing further the strength of hemiplegic limbs and with actual improvement of the mental and physical status of the child.

The end results of surgical treatment cannot be assessed accurately until cases have been followed up for a considerable period.

Since surgical extripations are made when medical management has failed and 33% of the patients had no attacks and another 42% improved, these results must be considered as satisfactory. There is no doubt that the results will be bettered as the diagnostic and surgical techniques improve but even now cortical excision of an epileptogenic focus offers considerable promise to a group of patients otherwise considered incurable.

In summary it may be stated :—

1. Surgical treatment of focal epilepsy should be considered when medical management is of no avail.
2. The clinical history, the Electroencephalogram, Pneumoencephalogram and cerebral angiogram suggest the focal nature of epilepsy but the diagnosis will be established by corticogram and the entire clinical picture.
3. Depending upon the extent of the focus, it may be necessary to do sub-pial resection, partial lobectomy or hemispherectomy in order to eliminate the abnormal activity.
4. Some of the hopeless and the so-called incurable cases of fits have been given promise of a fairly good recovery.

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ASSOCIATION NOTES

ANNOUNCEMENTS

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Similar contributions from other Members are welcome.

THE IV ANNUAL CONFERENCE

The Fourth Annual Conference of the Neurological Society of India will be held at Nagpur along with the Association of Physicians of India, in the month of February, 1955.

Those desirous of presenting papers at this conference are requested to send to the Secretary (at No. 43, Harris Road, Madras-2), the title and synopsis of their paper on or before 1st December, 1954.

Subject for the symposium at this conference is PARAPLEGIAS :

Speakers :

1. Neuro-physiological Aspects
   Dr. Baldev Singh, Vellore.
2. Medical Aspects
   Dr. Bharucha, Bombay.
3. Intra Spinal Tumours
   Dr. B. Ramamurthi, Madras.
4. Surgical Aspects (other than tumours)
   Dr. Jacob Chandy, Vellore.
5. Control of Bladder and bed sores
   Dr. Ram G. Ginde, Bombay.

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