Essential Tremor; Symptomatology and Modern Treatment

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INTRODUCTION

With the progress of the treatment of Parkinson's Disease brought about with the introduction of the substitution therapy Laevodopa, the differential diagnosis between essential tremor (ET) and the tremor of the Parkinson Syndrome has attained renewed actuality. ET subsumes not only the familial form but also the sporadic and the senile tremor. The condition is also called Morbus Minor, Tremophilia, nervous and action tremor. Subgroups for the Familial Tremor are the Hereditary tremor and the essential heredo-degenerative tremor.

Although ET. may after a long time, and in some cases, it might cause substantial impairment or partial invalidity, yet as a whole it is a mild but distressing symptom and not a common disorder.

ET. is reluctant to the treatment with Laevodopa or might even be deteriorated while considerable improvement has been noticed after treatment with Beta-Blockers.

SYMPTOMS AND COURSE

The following description is based on the result of clinical examination of 84 patients with ET., seen at the Department of Neurology of the University of Innsbruck and 16 patients seen at the Department of Neuropsychiatry, Al Mustansiriya University Teaching Hospital, Baghdad.

ET. begins generally in the hands and fingers, extends to the proximal

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parts of the upper extremities but occasionally to the head and eye lids. In some cases the tongue, perioral muscles and the larynx are also involved resulting in a trembling speech. The lower extremities are rarely involved. Ganner and Vonburn[12], have described hereditary tremor of the lower jaw in a Tyrolian valley. Isolated tremor of the head occurs not infrequently[24,25].

In 96.4% of Gerstenbrand et al patients[13], tremor of the upper extremities was reported, which was the only complaint in 46.4% of them. Typically the tremor increases while taking food or on excitation and during clinical examination.

The frequency of tremor[21,23], lies between 4-12 sec., mostly however 4-6 sec., the frequency decreases with aging. ET., is a primarily postural which might increase considerably with volitional movements or even to lead into overshooting. However, the movement in its course remains directed toward its aim. The intentional component of ET., appears distinctly in the finger-nose test, however no other cerebellar signs could be detected. ET., appears especially with the spreaded fingers and elevated arms resembling the posture of a preacher, which was called du serment by Guyot et al[14]. It is enhanced by movements which require precision, as well as by efforts, adrenaline, cafeine and nicotine. ET., may stop at rest and always disappears during sleep[23]. A morning peak of the tremor intensity has been described by Koch[20], Gerstenbrand et al[13] who found a morning peak in 28.6% of their reported cases. To a much less extent, an afternoon peak has been reported.

The disorder was stationary in most of the cases, yet 41.7% of Gerstenbrand et al cases were progressive. Progression occurs primarily with advancement of age, where in many cases additional tremor of the head, lower jaw and tongue are added. Following apoplexy, an improvement in the tremor of the paretic extremity has been observed by Haebler[15], and Mylle[27] and Gerstenbrand et al[13].

Tremor is usually the only symptom of the disorder, but occasionally a decrease and never increase in muscle tone detected. C.S.F. study, E.E.G., and C.T. Scan did show no abnormality. Occasional cerebral atrophy could be detected that corresponds to the individual age. Non of these tests were carried out on the Iraqi patients (a pure clinical study). Specific psychiatric symptoms were missing, but reactive depression does occur in some patients.

The age of onset did exhibit two peaks, early youth 15 and beginning senility, 60 years of age. The same finding is also advocated by Hassler[16], while reports from other authors did report earlier or later peaks[10,13,17,21]

Male to female ratio was 3:2 below the age of 40 while after that it is 7:8. Findings that correspond to Gerstenbrand and Harnabrook[17] cases (respectively), among the population of Papuas if the senile tremor is included, as we did in our study.

Among the Iraqi patients, none is reported to have tremor of any parts of the body apart from the fingers and to a lesser extent the head, which is exclusively in patients over 40.

EPIDEMIOLOGICAL ASPECT

In most of the instances, ET., is detected incidentally when the patient seeks medical advice for other reason due to the minimum disability induced especially in the familial group. The morbidity is higher according to the figures of Larsson and Sjorgen[21] who found a rate of 1:470 in northern Sweden and of Hornabrooks[17] who found a rate of 3.5/1000 among the population of Papaus in New Guinea.

Critchley[6] postulated a dominant autosomal Gene to be blamed for the familial type, which was confirmed by Sigwald[38]. Shade[33] studied a family of 22 members and was able to recognise irregularities and fluctuation in the expressivity and penetrance of the gen. The family investigated by Gerstenbrand et al[13], did exhibit inconstant penetrance.

The pattern and localization of the tremor is usually uniform among members of the family.

A familial autosomal dominent transmission occurs in some animals. A family of marmots in the Alpins zoo of Innsbruck as well as freely living marmots in the Stubai valley of Tyrol are known to have tremor and darker fur[13].

Inspite of the high rate of consanguinity among the Iraqi population, familial tremor is not identified among the cases under study, probably of their very mild disability that did not warrant medical advice.

PATHOMORPHOLOGY AND PATHOPHYSIOLOGY

Spotty degeneration of small striatum cells represent the morphological substrate of hereditary tremor[16]. The dorsal and lateral two thirds of the putamin and the dorsal half of the head of the caudate are affected. Since these spot-shaped degenerations prevail around blood vessels, Hassler assumes a congenital vascular anomaly in the basal ganglia. Confirmation by autopsy in juvinile tremor is still missing. Atherosclerosis and toxic influences might play their roles. Senile tremor may be indistinguishable from hereditary tremor on account of its circumscribed and multifocal atherosclerotic lesions which are similarly localized around the

blood vessels. Ascending connections from the striatum to the motor cortex as well as the efferent nigro — reticulo spinal tracts and the pyramidal tract are in the discussion as the pathways playing the role in governing the tremor[16].

DIFFERENTIAL DIAGNOSIS

A demarcation between ET., and senile tremor on the bases of their symptomatology is not possible, therefore in the litritures the senile tremor is thought to be ET. in its senile form [13,17,36]. However, its distinction from Parkinson's tremor is very important. Hassler in his work on Parkinson[16], found 11 cases among 150 patients with Parkinson's disease. Of 11 patients with essential tremor treated by Packenberg[20], 4 did not respond to therapy and were later on proved to be Parkinsonean. At the onset of Parkinson, especially were tremor is the only presenting symptom, the demarcation from essential tremor is difficult, but the positional and intentional character of ET as compared to the static character of the Parkinsonean tremor and its diminution on effort and motion could be of asset. Later on the akinesia, rigidity, hypersalivation, the greasy face, the shufling gate will make it very clear to give the diagnosis of Parkinson, besides, the introduction of L. Dopa for the treatment will never improve ET. or even might worsen the condition.

ET. is differentiated from cerebellar tremor on the bases of the other cerebellar symptoms, postural ataxia, atatic gait, dysdiadocokinesia nystagmus etc. Severe forms of ET may be mistaken for cerebellar intention tremor. The physiological tremor associated with low temperature, physical effort, fatigue, and emotional excitement occurs only during the states mentioned. Simulated or malingering tremor may be recognized easily on account of its changing frequency during examination and the inability of maintaining the tremor in certain postures. Psychogenic tremor is induced by a shocking experience, a terrible scene witnessed at an accident of a shell in the immediate vicinity or similar events. According to Ederle[9], the physogenic tremor disappears with diversion of attention.

The postencephalitic tremor, the alcoholic tremor and other types of toxic tremor (thyrotoxicosis, chronic mercury poisoning, lithium etc.) may be differentiated from ET. on the bases of the medical history, while the tremor associated with hepatolenticular degeneration or multiple sclerosis could be diagnosed on the bases of clinical, morphological and biochemical investigations, the same is applied with regard to the tremor of the Roussy Levy Syndrome, spastic torticollis and hereditary torsion dystonia.

THERAPY

The introduction of Beta receptor blocking substances has opened a new era in the positive treatment of ET. Furthermore, a number of other drugs, psychotherapy and steriotactic intervention might influence ET. positively[43]. According to Rie hert and Richter[31], Bertrand[4] and Blacker[5], complete cure were achieved in 98% of their patients. The procedure is to induce steriotactic lesions in the ventro lateral thalamus and the posterior subthalamus. On account of the possible improvement with chemotherapy, the steriotactic intervention is restricted to severe cases and to applied if drug therapy does not produce satisfactory results. Futile attempts were made with extracts of belladona, anticholinergics[6,22] amantidine[7], pyridoxine and tryptophane[26], monosodium glutamate, a precursor of GABA[1] as well as L. Dopa which sometimes enhances ET.[3,29]. Chlodiazopoxide and medazipam[7], and other sedatives or tranquilizers[8] and even alcohol[31,37] lead into slight diminution of the tremor.

A breakthrough in the therapy of ET. was attended by the reports based on the administration of the beta blocker propranalol in Parkinsonian patients[28] and later, by the favourable results with the same substace in cases of ET.[9,35]. Number of other therapeutic observations and controlled studies have confirmed the effectivity of propranalol in ET.[3,19,36,39,41,44]. In contrast, other authors as Balla[2], Forster[11], Sweet[40] and Scopa[34], were not convinced about its efficacy.

Rangel-Guerra[30], Rinne and Kaltanieml[32], Teravainen et al[41] and Jefferson et al[19], reported distinct improvement with Sotalol, a substance not included in the cardioselective beta blockers which has no own sympathicomimetic effect.

In a double blind study on the Asterian cases, Bupranolol in daily dose of 100-200 mgms. in two doses, showed a positive effect in 67% of cases. An observation that coincide with the results of Winkler and Young with 75% positive response[44].

Propranalol was used among the Iraqi patients with a positive response in 60% of cases.

Side effects within the patients under study, were very slight mild dizziness, mild sleep disturbances, dreams, headache and bradycardia, None was severe enough to warrant cutting the medicine.The majority of patients did experience inner calm and quietness which is perceived pleasantly and which is due to the anxiolytic effect of the beta blockers.

There are relative contraindications to the therapy with the beta block-

ers in patients suffering of decompensated heart failure, arrhythmic bradycardia, hypotension, broncheal asthma or chronic constrictive bronchitis.

Recently, a newly developed beta blocker **(LT31-200)** with a presumably improved neurotropic effect to show better results (Gerstenbrand Powe, Klingler. Unpublished data).

SUMMARY

Essential tremor (ET) is not an uncommon Neurological affection, which is often incorrectly diagnosed as Parkinson disease. Partial invalidity might be noticed in long standing cases and the introduction of L. Dopa on the presumption of its Parkinsonian origin will lead into deterioration.

Tremor is the only symptom of the affection, it is mostly postural but could be static or intentional.

According to our study, it is localised mostly in the upper extremities (96%) of the cases. Infrequently it might affect the head or other parts of the body.

Epidemiologically, hereditary and sporadic types were observed. The senile tremor according to our opinion and the opinion of various authors, is an ET appearing after the age of forty.

Beta blockers do improve the ET in more than two thirds of the cases. Propranolol, Bupranolol and the newly developed substance (LT 31-200), may be applied without major side effects and are effective even after the medication is discontinued.

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