**Briefing Paper on Neurological Diseases which are, or may be, associated with psychiatric symptoms.**

The term “neurological disease” means diseases where there is structural change in the central nervous system ie the brain and spinal cord. It is not surprising that many, if not most neurological diseases involving the brain can be associated with psychiatric symptoms, which may in fact be the presenting symptoms of the illness. It is useful to remember that dementia is not a diagnosis in itself, but simply implies intellectual decline, usually progressive;

The following list is not exhaustive, I propose to describe briefly psychiatric symptoms associated with the disease.

**Alzheimer’s Disease**

This is a neurological disease which presents with psychiatric symptoms. In this disease, there are specific changes in brain structure, with the development of neurofibrillary tangles (brain cells which have degenerated and senile plaques (small pinkish-coloured plaques scattered throughout the brain, but concentrated in the temporal lobes) We know that these brain changes start about 10 years before any symptoms of the illness occur.

Alzheimer’s Disease can be divided into 3 stages. Stage 1, The onset is insidious, with a failing memory, a muddled inefficiency over tasks of everyday life and spatial disorientation (e.g. an inability to find the correct exit at a roundabout). This stage lasts for two to three years. There may be a mood disturbance, often a depression but no psychotic features. The mood disturbances take the form of perplexity, agitation and restless hyperactivity.

Stage 2 of the illness is a rapid progress of intellectual deterioration, with an inability to perform simple tasks, to calculate and to recognises objects( and people).

Stage 3 is a profound apathetic dementia, the patient becomes bedridden and doubly incontinent.

(It is helpful to remember that a poor memory is common with advancing years, and on its own, does not imply Alzheimer’s Disease, but is called “Benign Senescent Forgetfulness”)

**Cerebrovascular disease**

Loss of elasticity in the blood vessels supplying the brain with consequent hardening of the arteries (arteriosclerosis) results in a diminished supply of oxygen and multiple tiny strokes. As Alzheimer’s Disease tends to occur in the same age group, and often coexists, the clinical picture is sometimes difficult to characterise, as there is a “mixed” dementia. However, cerebrovascular disease is not generally characterised by memory loss and an insidious onset. Rather it occurs with a sudden onset of a minor neurological deficit, often at night, so the patient wakes up to find they have a difficulty with speaking, or a minor paralysis of a limb. The gait is wide-based with tiny steps (described by Déjérine as a “marche à petits pas”) The mood changes are often sudden with a tendency to cry easily.

**Parkinson’s Disease**

This is a common neurological disorder generally occurring after the age of 50. The classical form is a triad of tremor, rigidity and akinesia (poverty of movement) The tremor begins in one limb, usually an arm; the rigidity affects the large and small muscles of the neck, limbs and trunk ; movements are slow . There is a variety of Prkinson’s Disease which begins with akinesia and rigidity where tremor is absent.In this type of Parkinsonism, there is a relentless deterioration.

About 30% of patients develop psychiatric symptoms. These consist of a change of personality, with suspicion, irritability and egocentricity and an impairment of memory and intellect. The more severe cases have psychotic features, with depression, paranoia and sometimes visual hallucinations. Fortunately these symptoms respond well to anti-psychotic medication in small doses.

**Huntington’s Chorea**

This is a genetic disorder, half of the children of an affected patient develop the disease. The onset is usually between the ages of 25 and 50, The younger the age of onset, the more severe the disease. Psychiatric symptoms of personality change, emotional disturbance and paranoia antedate the neurological symptoms., the patient becoming quarrelsome and morose. Sometimes there is a florid schizophrenic illness for several years before the diagnosis becomes obvious with the appearance of the characteristic involuntary movements. These consist of random brief muscle jerks. At first, the patient is thought to be clumsy or fidgety and he or she attempts to hide the movements by exploiting them to perform a habitual activity such as smoothing the hair.

The dementia is insidious in onset with inefficiency at work and in the management of daily affairs. Memory impairment is rare but there are difficulties in attention, concentration and organisation of thought. Judgement may be severely impaired, but insight is retained, leading to depression and a high risk of suicide. Psychotic features become obtrusive in many cases, usually a depressive psychosis, accompanies by delusions of persecution or religiosity, which may respond to drug therapy,

**Creutzfeldt**-**Jakob Disease**

This is a very rare disease, first described in t 1920, as a rapidly-developing dementia with prominent visual symptoms, starting between the ages of 40 and 60. However, a more recent variety (mad cow disease) occurred in the 1980s and 1990’s in the UK in much younger patients, often teenagers. This was related to the consumption of meat from affected cows. These younger patients usually presented to a psychiatrist with an anxiety state, sometimes this occurs with tingling in the limbs, but they rapidly develop an unsteady gait with jerking limbs. The illness is always fatal usually less than 2 years from onset.

**Head Injury**

After a head injury, there are specific changes in the brain. In civilian life most head injuries are closed ie not due to a penetrating injury such as a gunshot wound . Closed head injuries are produced by an acceleration or deceleration injury with some rotation. The brain is not fixed inside the skull, and is not attached directly, apart from the cerebellum being separated from the cerebral hemispheres by the tentorium and the midbrain and spinal cord being continuous with the brain. As the brain is bathed by cerebrospinal fluid, this acts as a shock-absorber. In a closed head injury, the rotational effect therefore produces tearing of nerve fibres resulting in scattered small haemorrhages.

A severe head injury results in coma. If the patient survives, as they compe out of the coma, there may be an acute confusional state, which may last for months, and, in the more severe injuries, may evolve into a post-traumatic dementia. The picture is varied and depends on the patient’s previous personality: insecure subjects become depressed, the more extroverted exhibit noisy boisterous behaviour. Others behave in a petulant and childish way. Sometimes hysterical or paranoid traits may be released.

Occasionally the long-term management of aggressive, abusive and violent behaviour leads to long-term hospitalisation in a secure environment.

**Encephalopathy due to boxing and other contact sports**

These are increasingly recognised: it is now known that repeated mild head injuries have a cumulative effect on the vrain., even if there is only the briefest concussion each time. The “punch-drunk encephalopathy” that Mohammed Ali suffered from consists of slurred speech, ,slow movements, rigidity, a tremor of the head and hands, a sort of “Parkinsonism Plus”. It has been shown that the severity relates to the boxing career. Most cases show intellectual and personality change as well as their neurological disability. This is coupled with apathy,but some have irritability and disinhibition with outbursts of temper.

These findings to a lesser degree have been found in professional footballers as heading the ball is as damaging as a direct blow to the head.

**Conclusion**

Although many neurological diseases have psychiatric symptoms, as part of the disease, most patients presenting to a doctor with psychiatric symptoms will not have any of the disorders I have described,: they will simply have a psychiatric disorder. After all, one of the interesting facts (interesting to me anyway) is that if examined post mortem, the brain of a schizophrenic does not have any pathological changes , such as cell loss , widening of the ventricles, scarring (gliosis) or shrinkage of the brain (the brain of an Alzheimer patient post mortem is shrunken and resembles a large walnut).