

## **Discuss the use of any two biological (somatic) therapies in the treatment of mental disorders**

Electro-convulsive therapy (ECT) is primarily used to treat people with depression when drugs and psychotherapy have either not been effective or cannot be tolerated by the patient. ECT usually involves two to three treatments given over three to four weeks. There were approximately 65,000 ECT treatments administered in England in 1998–99.

The patient is made comfortable on a bed and given atropine (a pre-anaesthetic medication) to dry up salivary and bronchial secretions, and is then given thiopentone, a fast-acting anaesthetic. A muscle relaxant is also administered to ensure that the patient doesn't convulse violently or feel any pain. Electrodes are placed on the patient's head and controlled electrical pulses (70–150 volts) are passed through the brain for 0.04–1.00 second. There can be different amounts of electricity provided to produce a seizure with differing claims as to their effectiveness. The resultant seizure can last up to a minute. There are two types of ECT: unilateral ECT that involves stimulating only one hemisphere of the brain (typically the non-dominant one), and bilateral ECT which involves stimulation of both hemispheres. Many psychiatrists believe bilateral ECT is preferable as it acts more quickly and fewer treatments are needed.

One issue involves arguments as to how ECT works. Benton (1981) identified three possible reasons. The first is that patients see ECT as a punishment which stops their undesirable behaviour – 'dummy' shocks which are unpleasant but don't produce a seizure are not effective, however, and therefore inconsistent with this 'punishment' explanation. The resultant memory loss associated with ECT may allow the restructuring of the patient's view of their life and help to improve their depression. Perhaps the most plausible explanation is that ECT induces biochemical changes in various neurotransmitters, including an increased sensitivity to serotonin in the hypothalamus and an increase in the release of noradrenaline and endorphins (Lilienfeld, 1995). The fact that we cannot be sure about how ECT works is not a reason for not using it; Benton (1981) claims that the precise reason why aspirin works for headaches is not known.

ECT does appear to be effective in many cases and can have an immediate beneficial effect. Weiner *et al.* (1988) report that ECT produces a substantial improvement in at least 80 per cent of depressed patients. In terms of electrical dosage and placement of the electrodes, it appears that suprathreshold doses (2.5 times the electricity needed to produce a seizure) and bilateral ECT is more effective than low dose, unilateral ECT (Sackheim, 1989). In support of this, studies of depressed patients compared ECT with placebo ECT and drug therapy. They showed that there was a significant benefit of ECT over the placebo and drug treatments. However, there are also a number of concerns about the effectiveness and use of ECT. There is a small risk of death with ECT. However, the mortality rate is low (between 3.6 and 9 per 100,000 treatments) and this compares favourably with that of general anaesthetics. Taking into account the risk of depressed patients committing suicide if they are not given ECT, the risk is extremely low indeed. Nevertheless, many mental health groups (MIND and PROMPT) object to the use of ECT.

Two further issues concern possible side-effects and misuse of ECT. There are claims that there is a slightly increased risk of cognitive impairment in ECT patients, usually involving temporary amnesia. However, other researchers have found no evidence that ECT damages the brain. After all, epileptic seizures do not consistently harm the brain and, furthermore, ECT-induced seizures take place under far more controlled conditions than epilepsy. Another issue involves ECT being (mis)used as a form of social control. ECT has had a chequered history and may have been used in the past to control awkward or

troublesome patients. Clare (1980) argues that because it's relatively quick and easy to administer, ECT is much abused and overused.

Psychosurgery is the scientific treatment of mental disorders by means of brain surgery. It's used to treat severe, incapacitating non-schizophrenic mood disorders. Like ECT, it is only used when all other therapeutic attempts have failed.

The best-known technique involves stereotactic neurosurgery. This involves fitting a stereotactic frame to the patient's head and then scanning the brain using computer imaging. With the frame in place, the probe that enters the brain can be accurate to within one millimetre of its desired target. The probe is inserted in the brain and once in place is heated to 70 degrees Celsius to produce a small lesion (cut) in the brain tissue. The procedure is typically carried out under general anaesthetic and lasts about 90 minutes

Stereotactic surgery is now possible without cutting into the head. Radiosurgery involves projecting radiation into the brain from several different angles. The so-called 'gamma knife' concentrates radiation into a single point inside the brain, while the surrounding, healthy tissues are spared damage.

In the UK, psychosurgery is becoming less and less common. In 1968 there were 38,000 operations worldwide but this number dropped considerably in the 1970s. In England there were 500 operations in 1970 but only 18 in 1991. It is a very rare operation in the UK but more common in Australia and the USA (Taylor, 1992).

There are a number of important issues associated with the use of psychosurgery. To some, it seems ridiculous to believe that destruction of brain tissue could lead to an improvement in a mental disorder. Early humans drilled holes in skulls (called trepanning) to liberate demons and some people see a comparison with psychosurgery. After all, there's no universally agreed technique for psychosurgery. Most of the operations involve destroying some of the nerve circuits in the limbic system that's largely responsible for control and regulation of emotions.

Due to the small number of operations performed annually, it's very difficult to assess the effectiveness of psychosurgery, especially since the measure of success is not agreed. It is also impossible to determine how much improvement might have taken place without surgery (Gelder *et al.*, 1989). MIND (2002) report a study that suggests that of 42 operations, 34 patients showed an improvement.

There are issues involving side-effects and the irreversible nature of psychosurgery. Unsurprisingly, patients often report headaches that can last up to a week. Other possible effects include apathy, lethargy, epilepsy, intellectual impairment and personality changes. There is also the ethical issue of using an irreversible technique that is somewhat untested and untried. Since it's still not clear how psychosurgery works or indeed of its proven effectiveness, many people think it should be stopped. However, others believe it is a patient's right to be able to give their informed consent to such a last-chance operation. The mental health charity MIND states they are unhappy with its continued use.