ELECTROCONVULSIVE THERAPY

LEVEL 6

21.4.2021.

ECT
INTRODUCTION -1

- ECT IS A TREATMENT OF PSYCHIATRIC DISORDERS IN WHICH A BRIEF ELECTRICAL CURRENT IS PASSED THROUGH THE BRAIN OF THE ANAESTHETISED PATIENT USING A SPECIALIZED ECT MACHINE
- THE PATIENT IS PUT UNDER GENERAL ANAESTHESIA.
- A CONVULSION IS INDUCED ,WHICH IS MODIFIED BY MUSCLE RELAXANTS.

ECT
INTRODUCTION-2

- ECT IS A SAFE AND MOST EFFECTIVE TREATMENT OF MAJOR DEPRESSION AND CATATONIA, AMONG OTHER DISORDERS (ABRAMS 1997).
- IT IS ALSO A CONTENTIOUS TREATMENT.
- NEGATIVE ATTITUDES AND MISCONCEPTIONS ABOUND AMONG
  - MEDICASTUDENTS (PAPAKOSTA ET AL, 2005),
  - THE GENERAL PUBLIC (DOWMAN ET AL, 2005)
  - AND EVEN PSYCHIATRISTS (GAZDAG ET AL, 2005).
- THIS MAINLY ARISES OUT OF
  - IGNORANCE
  - BUT ATTITUDES CHANGE WITH
  - EXPERIENCE
  - EDUCATION/INFORMATION.

RECENT HISTORY OF ECT

- *ECT WAS FIRST PERFORMED IN ROME IN 1938*
- *(AND HAS BEEN IN CONTINUOUS USE EVER SINCE).*

HISTORY OF ECT

- CONVULSIONS HAD BEEN INDUCED FOR MEDICAL PURPOSES AT DIFFERENT TIMES OVER THE CENTURIES.
- IN AD 46,SCRIBONIUS LARGUS DESCRIBED THE APPLICATION OF ELECTRIC TORPEDO FISH TO THE HEAD AS A TREATMENT FOR HEADACHE.

- PARACELSUS (1490-1541) ADMINISTERED CAMPHOR BY MOUTH TO INDUCE CONVULSIONS IN THE TREATMENT OF MENTAL DISORDERS.

- IN 1785 AN ACCOUNT APPEARED IN THE LONDON MEDICAL JOURNAL OF CAMPHOR INDUCED CONVULSIONS FOR THE TREATMENT OF PSYCHOSIS.

HISTORY -THE FIRST ECT

- UGO CERLETTI (1877-1963), SUPERVISED THE FIRST ECT TREATMENT IN (1938) ITALY
- THE FIRST PATIENT, SE, WAS A 39 YEAR OLD ENGINEER FROM MILAN

- WHO WAS FOUND WANDERING THE STREETS OF ROME IN A PSYCHOTIC STATE.

- HE RECEIVED 11 TREATMENTS,
- OBTAINED A GOOD RESPONSE AND WROTE TO THE DOCTORS THE FOLLOWING YEAR THANKING THEM FOR THEIR TREATMENT.
- THE USE OF ECT SPREAD RAPIDLY AROUND THE WORLD. IT IS NOW USED MORE WIDELY IN MAJOR DEPRESSION THAN IN SCHIZOPHRENIA.

1 ST ECT

- WAS STRAIGHT ECT
- INVOLVED PINNING THE PATIENT DOWN AND APPLYING ELECTRODES ON SCALP
- INDUCING A SEIZURE A KIN TO EPILEPSY.
- IT WAS DISTRESSING TO PATIENTS
- IT CAUSED STRAIN ON THE MUSCULOSKELETAL SYSTEM
- INJURIES WERE COMMON
- BUT PATIENTS IMPROVED,

TYPES OF ECT

ECT IS CLASSIFIED INTO 2 TYPES.

- 1.STRAIGHT ECT – NO ANAESTHESIA.WAS COMMON BEFORE 1938.
- 2.MODIFIED ECT— WHERE ANESTHESIA , AND MUSCLE RELAXANT ARE GIVEN,
- IN BOTH TYPES THE PATIENT LIES IN SUPINE POSITION
- ELECTRIC CURRENT 50HZ FROM ECT MACHINE AND LASTING 4 SECONDS IS APPLIED
- THROUGH ELECTRODES PLACED BILATERALLY ON THE TEMPORAL REGION RESULTING IN A SEIZURE.

IMPROVEMENTS IN TECHNIQUE

- ECT HAS BEEN IN CONTINUOUS USE OVER THE YEARS SINCE 1938 .THERE HAVE BEEN TECHNICAL IMPROVEMENTS:

1. THE INTRODUCTION OF ANAESTHESIA TO ECT PRACTICE MADE THE PROCESS LESS DISTRESSING TO PATIENTS.(MODIFIED ECT)
2. ANAESTHESIA ALSO ALLOWED THE APPLICATION OF MUSCLE RELAXANTS WHICH REDUCED THE STRAIN ON THE MUSCULOSKELETAL SYSTEM, REDUCING INJURIES.
3. PRE-OXYGENATION AND ASSISTED VENTILATION DURING RECOVERY REDUCED SIDE-EFFECTS.
4. METHODS FOR MONITORING BRAIN AND BODY ACTIVITY BEFORE, DURING AND AFTER CONVULSIONS.

INDICATIONS

1. MAJOR DEPRESSION
2. POSTPARTUM DISORDERS
3. MANIA
4. SCHIZOPHRENIA

CONDITIONS TREATED

1.MAJOR DEPRESSIVE EPISODE

- MAJOR DEPRESSION IS THE CONDITION MOST COMMONLY TREATED WITH ECT. IT IS ESPECIALLY
- INDICATED WHERE DRUGS HAVE FAILED OR THERE IS SERIOUS RISK OF SUICIDE.
- ACTIVE ECT HAS BEEN SHOWN SUPERIOR TO PLACEBO ECT IN MANY TRIALS (E.G., GREGORY ET AL, 1985). FURTHER TRIALS OF THIS COMPARISON ARE UNNECESSARY.
- ECT HAS ALSO BEEN FOUND TO BE SUPERIOR TO THE AVAILABLE ANTIDEPRESSANT DRUGS IN MORE THAN A DOZEN TRIALS.
- A TYPICAL DESIGN IS FOR PATIENTS WERE DIVIDED INTO TWO GROUPS: ONE
- RECEIVING ACTIVE ECT AND PLACEBO MEDICATION, AND THE OTHER RECEIVING PLACEBO ECT
- AND ACTIVE MEDICATION (GANGADHAR ET AL, 1982).
- IN THIS WAY ECT CAN BE COMPARED WITH AND ANTIDEPRESSANT MEDICATION, AND BOTH GROUPS OF PATIENTS RECEIVED AN ACTIVE FORM OF TREATMENT.

POSTPARTUM DISORDERS

- A RANGE OF PSYCHIATRIC DISORDERS MAY DEVELOP FOLLOWING CHILDBIRTH.
- THE MAJORITY CAN BE MANAGED WITH SUPPORT AND THE JUDICIOUS USE OF MEDICATION.
- ACUTE, SEVERE DISORDERS MAY DEVELOP, HOWEVER, AND MOTHER MAY REPRESENT A DANGER TO HERSELF AND/OR THE BABY.
- AS A GENERALIZATION, THE MAJORITY OF THE SEVERE POSTPARTUM CONDITIONS ARE SIMILAR TO AN EPISODE OF MAJOR DEPRESSION, AND THE REMAINDER ARE PSYCHOTIC EPISODES, WITH DELUSIONS AND HALLUCINATIONS.

2.MANIA

- MANIA IS A STATE OF MOOD ELEVATION OR IRRITABILITY AND PHYSICAL OVER-ACTIVITY.
- TREATMENT MAY BE A NECESSARY TO ENSURE FOOD AND FLUID INTAKE AND PREVENT EXHAUSTION AND PHYSICAL INJURY.
- THIS IS A DIFFICULT POPULATION TO STUDY FOR VARIOUS REASONS.
- UNIVERSAL CLINICAL EXPERIENCE IS THAT ECT IS AN EFFECTIVE TREATMENT AND CAN BE LIFESAVING.
- ECT HAS BEEN SHOWN SUPERIOR TO LITHIUM CARBONATE IN ACUTE MANIA (SMALL ET AL, 1988).

3. SCHIZOPHRENIA

- MEDUNA USED CAMPHOR TO INDUCE CONVULSIVE IN SCHIZOPHRENIA, Budapest neuropathologist
- Ladislaus von Meduna (1896–1964) introduced the modern practice of convulsive therapy by chemical means.

- SE, THE FIRST PERSON TO RECEIVE ECT WAS SUFFERING A PSYCHOTIC DISORDER.

- ECT IS CURRENTLY USED IN SCHIZOPHRENIA WHEN THERE ARE MARKED CATATONIC FEATURES WITH LIMITED FOOD AND FLUID INTAKE

- AND WHEN OTHER PSYCHOTIC SYMPTOMS ARE UNRESPONSIVE TO MEDICATION.

MAINTENANCE ECT 1

- WHEN MEDICATION HAS FAILED AND ECT IS NECESSARY TO INDUCE REMISSION IN MAJOR
- DEPRESSION, AND MEDICATION FAILS TO PREVENT RELAPSE, MAINTENANCE ECT IS CONSIDERED
- (FREDERISKE ET AL, 2006).

- THIS IS CONDUCTED ON AN OUTPATIENT BASIS. THE FREQUENCY OF ECT IS DETERMINED BY CLINICAL RESPONSE.

- OFTEN, ON COMPLETION OF A COURSE OF ECT, WHEN REMISSION HAS BEEN ACHIEVED, ONE ECT CONTINUES TO BE GIVEN AT WEEKLY INTERVALS.

MAINTENANCE ECT 2

- THIS IS USUALLY GRADUALLY EXTENDED OUT TO ONE TREATMENT EACH 4 OR 6 WEEKS
- (GAGNE ET AL, 2000).

- THE NATIONAL INSTITUTE FOR CLINICAL EVIDENCE (2003) IN THE UK, DOES NOT RECOMMEND
- MAINTENANCE ECT.

- THE AMERICAN PSYCHIATRIC ASSOCIATION DOES, AND THERE IS A CONTINUOUS, BUT MODEST, STREAM OF PUBLICATIONS ON THE TOPIC (GUPTA ET AL, 2008)

- LOCALLY. TREAT AN EPISODE WHEN IT OCCURS AND IS INDICATED

Mode of Action

- The mode of action remains unclear,
- however, ECT tends to produce same results as antidepressants,
- and is relatively faster in producing response.
- Therefore several neu-transmitter systems may be involved.
- Dopamine system may be particularly affected.
- ECT is also thought to stimulate neurogenesis in preclinical models.
- Since ECT, also diminishes the neuro psychiatric manifestations in epileptics, it has potent anticonvulsant and mood subsisting effect that can also be beneficial in effective disorder.
- Repeated use of ECT has not demonstrated brain damage.

Side Effect 1

- ECT is a relatively safe treatment procedure. However, every treatment has inherent side effects and for ECT, they are categorized as those related to general anesthesia such as respiratory depression.

- Other side effects experienced upon recovery from general anesthesia are headache and nausea, these can be easily managed using the relevant conventional treatment for each.
- terminate treatment before the sixth ECT IF PT RESPONDS SATISFACTORILY.

Side Effect 2

- One side effect that concerns psychiatrist, patients and their relatives is the cognitive impairment that seems to follow ECT.
- Cognitive impairment presents as acute confussional state, lasting about 20 minutes, retrograde and anterograde amnesia.
- Depressive disorders are known to be associated with cognitive deficits and at times it is difficult to distinguish those that are due to ECT or the depressive disorder itself.

Side Effect 3

- However, the clinical presentation will either show improvement or deterioration as determined by prior treatment state.
- The anterograde amnesia is transient and retrograde amnesia is restricted to events just prior to each treatment. Few patients exhibit persistent retrograde amnesia extending back in life.
- To avoid excessive cognitive impairment it is recommended that further ECT treatment after symptom relief is achieved must be avoided.
- There is no justification to continue with treatment in an effort to bolster response to ECT. Thus one should titrate ECT to response and decide when to

Indication and Contraindication

- Clinically, ECT is commonly used in treatment of depressive disorder and treatment resistant mania.
- Depressive disorder should be severe, for example depressive stupor, depression with suicidal attempts or ideation and must have failed to respond to optimal antidepressant treatment or the patient suffers a lot of side effects and can not tolerate the drugs.
- Other indication that is less common is in treatment of schizophrenia, but this should be last option, after optimal treatment trial with typical and atypical narcoleptics

Indication and Contraindication

Uncommon indications are

- movement disorders,
- obsessive compulsive disorders,
- narcoleptic malignant syndrome
- and catatonic stupor.

- **Indication and Contraindication**
- Contraindications for ECT are categorized as absolute and relative contraindications. In the absolute contraindications ECT must not be administered where there is recent myocardial infarction, recent cerebrovascular accident and raised intracranial pressure.

Indication and Contraindication

- Relative contraindications are, osteoporosis, pregnancy, space occupying lesion or history of cerebro vascular accident. Use of ECT in pediatric population is not recommended.

Conclusion

- ECT appears extremely effective in depressive disorders, however the relapse rate is also high especially in treatment resistant patients. Additional prophylactic treatment is required to reduce relapse.

- Further treatment akin to ECT have been tried for treatment of bipolar disorder. For example Repetitive Transcranial magnetic simulation (rTMS). In this procedure fast right or fast left prefrontal rTMS are applied. Since data on the efficiency of RTMs is still scanty this technique should be considered experimental.