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**Introduction** John Farquhar Fulton was an American neurophysiologist and historian, who pioneered psychosurgery based on animal experiments. Together with psychologist Carlyle Jacobsen, Fulton presented the results of bilateral frontal lobe ablation in chimpanzees. This study prompted neurologist Egas Moniz and neurologist Walter Freeman to perform similar brain surgery on human subjects.

**Objectives** To present the scientific papers of John Farquhar Fulton on psychosurgery.

**Aims** To review available literature and to show evidence that John Farquhar Fulton made a significant contribution to the development of psychosurgery.

**Methods** A biography and research papers are presented and discussed.

**Results** Fulton and Jacobsen experimented with 'delayed response tasks' in chimpanzees. The aim was to test the animal's capability to memorize the correct location of the food. They found that after sequential ablations of the left and right frontal association cortices these memory tasks became significantly difficult for the monkeys to perform. The researchers saw parallel conclusions in clinical cases of human frontal lobe damage.

**Conclusions** An investigation into the role of the limbic system is one of the crowning achievements of John Farquhar Fulton, as this has influenced even today's thinking about the role of the limbic system. We should thank Fulton for his pioneering work as modern psychosurgery has gradually evolved from irreversible ablation to reversible stimulation techniques, including deep brain stimulation.

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## EW0780

### Analysis of ECT indications in the hospitalized psychiatric patients

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**Introduction** Electroconvulsive therapy (ECT) has been considered a treatment option for the treatment resistance, mania, depression, suicidality and schizophrenia. It has been still controversial due to the lack of controlled clinical trials and unknown biological basis but also because of the negative image from the history of the treatment.

**Objective** Specifics of the clinical judgement on when and for which patients' indications, ECT was a treatment choice.

**Aim** of the study was to evaluate indications for the ECT treatment in the hospitalized psychiatric patients at the psychiatric department.

**Method** For all the patient cases in the last 7 years at the department ( $n = 326$ ), data was analyzed regarding age, gender, number of hospitalizations, age of first episode, diagnose, previous treatment, leading indication for ECT and outcome after the ECT, regarding following treatment.

**Results** The leading indication for ECT was psychosis and/or pharmacological treatment resistance, followed by suicidality. Patients with psychosis were younger than patients with other diagnoses when receiving ECT treatment. Regarding the results, indications for ECT had been partially differentiated from expected guidelines. Outcomes after the ECT were favorable in terms of better control-

ling the symptoms, lowering exacerbation frequency and intensity and partially, functioning.

**Conclusion** Studies on ECT indications and outcome could provide further insight on efficacy of the treatment, and possible improvements in clinical assessment on eligible patients who could benefit from the ECT treatment.

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## EW0781

### A systematic review and meta-analysis of the mortality rate of electroconvulsive therapy (ECT)

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**Introduction** Electroconvulsive therapy (ECT) is an efficacious treatment for many mental disorders, but is underutilized because of fears of adverse effects, including the risk of death.

**Objectives and aims** To provide a full picture of the magnitude of ECT-related mortality worldwide.

**Methods** We performed a systematic review and meta-analysis (PubMed and Embase) in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. Only publications reporting on a specific number of ECT treatments as well as specific number of ECT-related deaths were included in our analysis. The ECT-related mortality rate was calculated by dividing the total number of ECT-related deaths by the total number of ECT treatments. The 95% confidence interval (95% CI) of this estimate was calculated using Bernoulli's principle of distribution.

**Results** Fourteen studies with data from 32 countries reporting on a total of 757,662 ECT treatments met the predefined inclusion criteria. Fifteen cases of ECT-related death were reported – yielding an ECT-related mortality rate of 2.0 per 100,000 treatments (95% CI: 1.0–3.0). In the eight studies published after 2001 (covering 406,229 treatments), no ECT-related deaths were reported.

**Conclusions** The ECT-related mortality rate was estimated at 2 per 100,000 treatments. For comparison, a recent meta-analysis on the mortality of general anaesthesia in relation to surgical procedures reported a mortality rate of 3.4 per 100,000. Thus, our systematic review and meta-analysis documents that death caused by ECT is extremely rare. This information can be used to reassure patients in need of ECT.

**Disclosure of interest** The authors have not supplied their declaration of competing interest.

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## EW0782

### The changes of social performance with transcranial magnetic stimulation (TMS) in depressed patients

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**Objectives** The purpose of this study was investigating the effectiveness of rTMS (repetitive transcranial of magnetic stimulation) on increase social performance in patients with recurrent major depression.

**Method** It was used a quasi-experimental, pretest–posttest design with control group, a sample consisting of 32 patients who had depression on the basis of DSM-IV diagnostic criteria, SCID and BDI-II scales and were randomly assigned to two groups.

The experimental group underwent 20 sessions of rTMS as the independent factor and both groups (control & experimental) had 12-session psychotherapy and drugs treatment. Upon the intervention, both groups were tested with two tests (BDI-II & SASS). To determine the effect of the independent factor on the dependent factor of rTMS.

Data were analyzed by *t*-test.

**Results** The comparison between pre- & posttest of all the tests showed the reduction of signs & symptoms of depression, ( $\alpha = 0/05$ ) (Beck scale  $P \leq 0/001$  &  $F = 30$ ) and increase social performance in participants ( $P \leq 0/001$  &  $F = 83$ ).

**Conclusion** The rTMS is effect in the reduction of signs & symptoms of depression and increase social functioning in recurrent major depression.

**Keywords** Social performance; Magnetic stimulation; Major depression

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#### EW0783

### The research of electroconvulsive therapy effect on cognitive function in rats with depressive-like disorder formed by ultrasound

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Electroconvulsive therapy (ECT) is effective method of resistant depression treatment. ECT activates neurotransmitter systems, increases neurotrophic factors production, induces neurogenesis. Nevertheless, ECT side effects, expressed as temporary amnesia, limit its application in clinical practice.

The objective of our work was to estimate rat's memory after ECT in the behavioral test: "Object recognition", "Morris water-maze". The aim of the work was to research the effect of ECT on cognitive function in rats with depressive-like disorder and in normal rats.

**Methods** The research was conducted with Sprague-Dawley rats ( $n = 41$ , 2 month age). Experimental stages:

– control group ( $n = 10$ ) compared to control + ECT group ([70 mA, 50 Hz, 500  $\mu$ sec; 10 days]  $n = 10$ );

– control group ( $n = 9$ ) compared to group with depressive-like disorder, formed by ultrasound ([20–45 kHz; 21days] US,  $n = 6$ ) and group with depressive-like disorder received ECT ( $n = 6$ ).

Memory was estimated in the "Object recognition" and "Morris water-maze" tests.

**Results** (1) ECT did not decrease cognitive function in the "Object recognition" test in normal rats ( $P = 0.1217$ ). Also, it did not lead to cognitive impairments in the "Morris water-maze" test: time of platform searching did not differ significantly from the control group ( $P = 0.8573$ ).

(2) ECT produced recovering effect on memory impairments of the US group in the "Object recognition" test ( $P = 0.0066$ ). In the "Morris water-maze" ECT decreased time of platform searching by 7 times compared to the US group ( $P = 0.0025$ ). That demonstrates the absence of ECT negative effect on rat's memory.

**Conclusion** ECT does not produce negative effect on cognitive function in rats with depressive-like disorder and even recovers memory impairments.

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#### EW0784

### Glucocorticoid activeness in patients with mitral valve prolapse and autonomic dysfunction

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**Background** Urgency of psychophysiological examination of mitral valve prolapse (MVP) patients is suggested by a high incidence of anxiety disorders among these patients.

**Objectives** To study glucocorticoid function activity and emotional stress resistance in MVP patients with autonomic dysfunction (AD).

**Methods** The trait anxiety level (TA) was assessed with the State-Trait Anxiety Inventory (Spielberger). Emotional stress resistance was undertaken with our modified version of Rosenzweig Picture-Frustration Test (Zinchenko, Pervichko). The cortisol level in blood plasma was measured by radioimmunoassay technique with radioimmune assay kit of cortisol in human blood plasma 'KORT-3N' (Belarus). There were 32 MVP patients (mean age was  $28.5 \pm 1.6$  years) and 15 healthy people (mean age was  $27.5 \pm 1.3$  years) who took part in the study.

**Results** Among reactions to frustration revealed by MVP patients the following categories are dominating: extrapunitive (E), ego-defensive (ED), and obstacle-dominance (OD). There was revealed a direct correlations: TA and E ( $r = 0.49$ ,  $P < 0.001$ ); TA and ED ( $r = 0.46$ ,  $P < 0.01$ ); TA and indexes of AD ( $r = 0.43$ ,  $P < 0.01$ ).

There was displayed a higher level of cortisol in MVP patients with severe grade of AD, against the level revealed by patients with average grade of AD ( $433.9 \pm 78.0$  mmol/L vs.  $299.3 \pm 42.9$  mmol/L;  $P < 0.05$ ). Direct correlations were established between the cortisol level and the level of TA ( $r = 0.45$ ;  $P < 0.01$ ); between the frequency of E-reactions in Modified Rosenzweig Test and cortisol level ( $r = 0.42$ ;  $P < 0.01$ ).

**Conclusion** Along with low stress resistance, registered AD and high level of TA, MVP patients reveal higher indexes of cortisol in blood plasma.

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#### EW0785

### Life events, quality of life, autonomic nervous system, and cardiovascular risk factors

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