

A concise guide to electroshock: Indications, mode of action, risks, alternatives

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ABSTRACT: This article offers a concise guide to the history, current use, supposed and actual actions of electroshock, its impact and the responsibility taken by manufacturers of electroshock devices for adverse effects and injury.

KEY WORDS: ECT, iatrogenesis, psychiatry

Internationally, psychiatrists are increasingly administering electroshocks: in psychiatric hospitals, especially university clinics, and occasionally on an outpatient basis in psychiatric practices. "Referrers" in private practice or in clinics see to it that patients are referred to facilities with electroshock apparatus ready for use. Yet electroshock as a psychiatric treatment measure is highly controversial. Patients, relatives, medical professionals, journalists and lawyers all want to know:

- How do electroshocks work?
- When and to whom do they administer electroshocks?
- What risks and damages do manufacturers admit to?
- How did electroshocks come into the world?
- How are electroshocks administered today?

- Are there no alternatives to electroshocks?
- How are patients, relatives and the medical staff informed about the risks of treatment?
- What responsibility does the manufacturer take for potential damage?

How do electroshocks work?

An electroshock through the head triggers an epileptic seizure - the intended effect. The electric current is usually sent for between 0.5 and 8 seconds, sometimes up to 30 seconds. The current voltage is about 450 volts, the current intensity is about 0.9 amperes. (For comparison: during electrical defibrillation of the heart, for example after a cardiac arrest, the current surge lasts 4 milliseconds.) If the epileptic seizure does not follow as desired, a new current surge is given at intervals of 60 seconds with an increase in the current dose of up to 50%.

The current spreads in two ways: firstly through the brain, and secondly along the vascular tree, which can be compared to an electrical wiring network. The blood vessels are affected by spasms, the blood-brain barrier breaks down, haemorrhages occur throughout the brain and brain cells can be irreversibly destroyed. The triggered brain-organic psychosyndrome is accompanied by confusion, disorientation, loss of the ability to make decisions and of memory potential, the treated person is more indifferent to his or her original problems and the "therapy" considered successful. If this treatment effect does not occur immediately and permanently, electroshocks are administered in series, even repeatedly or regularly; the medically prescribed brain damage solidifies. For many psychiatrists, including the German Klaus Dörner and his co-author Ursula Plog, this brain-organic damage is intentional.

"We temporarily transform the mental sufferer into a brain-organic sick person, only more globally with ECT, but for a shorter time than with pharmacotherapy" (1984, p. 537).

Others, for example, the US-American Peter Breggin, criticise the damage:

"What we do is this: We inflict an inner head injury on people in mental crises – an inner head injury. (...) Even the question 'Do electroshocks cause brain damage?' is a dishonest question, because we know electroshocks cause brain damage, that after a series of electroshocks every single patient has a brain-organic psychosyndrome, with confusion, disorientation, mood swings, loss of decision-making ability" (1993, pp. 160-161).

Eight to twelve electroshocks at intervals of usually two to three days are usual. It is also possible to give 30 electroshocks or more.

In 1947, the German psychiatrist Anton von Braunmühl (1947, p. 185), head

physician at the Bavarian T4 intermediate madhouse Eglfing-Haar under fascism, demanded that we no longer speak of "shock" or "convulsive shock" but of "curative convulsion." Consequently, adherents of electroshock nowadays use more pleasant-sounding terms such as "electroconvulsive therapy (ECT)", "electrical flow therapy", "electrical stimulation" or "sleep therapy." The principle of action – triggering a widespread epileptic seizure – remains unchanged. Manufacturers and commercial enterprises still also use the established term "electroshock."

When and to whom do they administer electroshocks?

Electroshocks can be used for a wide range of psychiatric, neurological and internal indications (Lehmann, 2017, pp. 133-139). The most common indications are depression, schizophrenia, drug-induced psychosis, puerperal psychosis, catatonia ("being in a state of tension", accompanied by a disturbance of motor function, occasionally changing from extreme excitement to extreme passivity), mania, obsessive-compulsive disorder, pernicious catatonia (also called "acute fatal catatonia", "febrile catatonia" or "malignant catatonia" – a life-threatening syndrome accompanied by fever, stupor and lack of movement up to and including rigidity) and malignant neuroleptic syndrome (a life-threatening syndrome consisting of fever, muscle stiffness and clouding of consciousness). Of increasing importance for psychiatrists are the unsatisfactory effects and treatment resistance to antidepressants and neuroleptics, "failure of treatment with atypical neuroleptics", "non-response" to clozapine (neuroleptic ["antipsychotic"], commercially available as Cloment®, Clonia®, Clopin®, Clopine®, Closin®, Clozalux®, Clozapin®, Clozapine®, Clozarem®, Clozaril®, Clozatab®, Denzapine®, FazaClo®, Leponex®, Leydex®, Merbaril®, Versacloz®, Zaponex®) or its rejection, as well as augmentation (effect enhancement) of prescribed psychotropic drugs (Lehmann, 2022a).

There are no absolute contraindications for friends of electroshock. The proportion of electroshocked women is 70%. Psychiatrists also prefer to administer electroshocks to people over 50 years of age.

What risks and damages do manufacturers admit?

In their product description of its Thymatron® System IV device, the company Somatics, LLC, names harms that its devices can cause, including: "**devastating cognitive consequences**" (Somatics, undated – emphasis P.L.). By "cognitive" is meant "... human functions related to perception, learning, remembering, thinking and knowledge. Cognitive abilities include attention, memory, learning, creativity, planning, orientation, imagination or will" (BMSGPK, undated).

In addition, Somatics lists a whole range of other known damages to be expected after electroshocks, including memory disorders and brain damage, cardiac arrhythmias and heart attacks, blood pressure disorders, dental trauma, general motor dysfunction, manic symptoms (e.g., treatment-induced mania, post-traumatic delirium

or agitation), neurological symptoms (e.g., paraesthesias [unpleasant, sometimes painful bodily sensations with tingling, numbness, limbs falling asleep, cold and heat perception disorders], dyskinesias [disturbances in the physiological movement of a body region or part], falls, spontaneous seizures with a time lag), lung complications (e.g., aspiration of stomach contents, pneumonia, oxygen deficiency, airway obstruction such as laryngospasm, pulmonary embolism, prolonged respiratory failure), coma, visual disturbances, hearing complications, worsening of psychiatric symptoms, homicide and facilitation of suicidal behaviour.

How did electroshocks come into the world?

The earliest electroshocks are known from 16th century Egypt; electric eels, whose bodies are equipped with muscles that can release high electrical voltages, were used to cast out devils. In the industrial age, electric eels were replaced by apparatus – for the first time in 1917, when German psychiatrists wanted to bring combat fatigued (shell shocked) soldiers to their senses with electroshocks and make them fit for war again. The same year, after a series of deaths, the Berlin War Ministry stopped this treatment method. It was, however, revived in 1936 when in fascist Italy the psychiatrist and Mussolini supporter Ugo Cerletti recognised the "healing effect" of electroshocks: in dog experiments and after observations in a Roman slaughterhouse, where pigs were incapacitated by electroshocks so that they could be slaughtered more calmly. Since 1938, this treatment method was used in psychiatry. The reason given for this was the belief that people with epilepsy were less likely to become "schizophrenic." With his previous experience of administering electroshocks to combat fatigued soldiers during the First World War, the German psychiatrist Lothar Kalinowsky, who had attended Cerletti's experiments in Rome in 1936, took his know-how with him when he emigrated to the USA – his knowledge fell on fertile ground. There, people were very familiar with the use of electric machines ("electric chair") (Hedrich, 2014).

The current return of fascist ideas (anti-Semitism, homophobia, racism, xenophobia, etc.) is matched by the hype surrounding electroshock, which emerged during the fascist era. With increasing temporal distance to the psychiatric mass murders during German fascism and the progressive brutalisation of society, civil courage and adherence to the Hippocratic Oath ("Primum nil nocere" – "First do no harm") are dissolving away among psychiatrists and especially psychiatrically oriented school doctors. In addition, the depression inducing effect of antidepressants, the psychosis inducing effect of neuroleptics and treatment resistance of antidepressants and neuroleptics, i.e., their "therapeutic" effect decreases over time, present psychiatric practitioners with a dilemma which they believe can no longer be solved other than by electroshocks.

Some years ago, the German Society for Psychiatry and Psychotherapy, Psychosomatics and Neurology (DGPPN, 2012) called on psychiatric institutions in

Germany, Italy, Austria and Switzerland to purchase electroshock devices throughout the country and to use electroshock consistently, preventively and continuously. At the same time, the German Federal Ministry of Health initiated a remuneration system for psychiatric facilities that allows hospitals to generate lucrative additional income with electroshocks and their hospital-specific billing as an additional service. Since January 2018, a psychiatric hospital in Germany receives €300 for each day of an inpatient stay, €297 is added for the first electroshock and €220 for each subsequent one. Should continuous 1:1 care become necessary, another €1000 per day can be charged. Since the organisational and personnel costs for administering electroshocks are high, this measure is especially worthwhile for institutions that administer electroshocks in a centralised manner – on an assembly line and in series.

In the case of refusal to consent to electroshock, those affected are threatened with forced administration, possibly even against the wording of advance directives. Supporters of electroshock see only the non-administration of electroshocks as a serious problem:

"Serious damage to health is considered occurring if there is a risk of serious bodily injury as a result of the delayed or non-administration of ECT..." (Olzen & Nickl-Jockschat, 2013, p. 218).

This shows the necessity of making a precise statement in a psychosocial advance directive whether one would like to receive electroshocks of whatever variant if the worst comes to the worst, or whether one forbids this for all its variants (Lehmann, 2022b). Advance directives are particularly important if there are psychiatric clinics near your home with electroshock devices ready for use or with psychiatrists who transfer their patients to facilities with electroshock devices ready for use.

How are electroshocks administered today?

Since the first application of "therapeutic" electroshock in the 1930s, electroshock devices, pulse sequences, and both the strength and voltage of the current used have been constantly modified. The two electrodes are sometimes placed "bilaterally" (= bi-temporally) on both temples, sometimes "left-anterior-right-temporally" (= "unilaterally", LART), i.e. left frontally and on the right temple; recently also "bi-frontally", i.e., on both sides of the forehead. In order to prevent bone fractures, which can occur during seizures, the treated persons are usually anaesthetised beforehand; the release of the seizure is suppressed with muscle relaxants, the seizure – the active principle of the electroshock – takes place "only" in the brain and in an unconscious state. In this way, the "defence and counter-defence" (von Braunmühl, 1942, p. 605) that experience has shown to occur also ceases. Agents to paralyse the central nervous system, anaesthetics and muscle relaxants indirectly give the electroshock an even greater effect, since the

increase in the convulsive threshold in turn makes a higher dose of electric current necessary to trigger the convulsive seizure.

In unilaterally administered electroshocks, the electrodes are applied to the non-dominant (usually) right side of the brain for speech production. Supporters of electroshock describe this procedure as the "gold standard for treatment with as few side effects and as efficiently as possible" and the affected area of the brain as a "mute zone" in which no memory functions are located. Accordingly, more serious memory disorders would not be expected. The Swiss doctor and psychotherapist Marc Rufer criticised this attitude, saying:

"It is irresponsible to speak of mute zones being shocked in this unilateral, one-sided application. There are spatial perception functions, visual functions, emotional functions. Acoustic, musical understanding and the holistic perception of contexts take place there. It is an area of the brain that is very important for being human as a whole. And it's appalling how they just downplay it" (Rufer, 1992).

Are there no alternatives to electroshocks?

In the period after the Second World War, fulminant and life-threatening malignant (pernicious, febrile) catatonia (a syndrome with motor-muscular or mental tension) was considered the most important indication for electroshock for a long time. Because of the crimes committed by German psychiatrists during the fascist era, anaesthetists in Germany were sceptical of psychiatrists who wanted to administer electroshocks. In this respect, electroshocking in the German-speaking countries was quite restrained for a long time if making international comparisons. In addition, patients with malignant catatonia came to internal medicine, where they were usually treated with benzodiazepines or other low risk anticonvulsant drugs. Within the profession, psychiatrists admit electroshocks are by no means a last resort, i.e., the last resort, when life is in danger, even in cases of severe depression. There are always alternatives, for example, the intensification of psychotherapeutic measures (Lehmann, 2017, pp. 154-155).

How are patients, relatives and the medical staff informed about the risks of treatment?

Supporters of electroshock declare that electroshocks – and especially their most modern variant – are "safer than Aspirin (ASA)", that they are "usually extremely well tolerated". Memory problems occur, if at all, only temporarily or are part of the treated mental "illness" and cannot be objectively measured, anyway. This is also the argument of critical reform psychiatrists. Supporters of electroshock do not mention the permanent brain and memory damage complained about worldwide by those affected (cf. Frank, 1990; Kempker, 2000; Andre, 2009) and by social and medical scientists (cf. Friedberg,

1977; Breggin, 1979; Rufer, 1992a, 2007; Lehmann, 2017, 2020, 2022c; Newnes, 2018; Robertson & Pryor, 2018; Zinkler et al., 2018). Nor the traumatising long-term effects and despairing states ending in suicidality after electroshocks admitted by the industry, specifically in US instruction manuals by the manufacturer Somatics. Nor the high number of premature births and stillbirths of electroshocked pregnant women. Nor the fine-tissue findings of massive brain cell losses in the brains of electroshocked cats. And certainly not the fact that – in contrast to psychiatry – neurologists generally do everything they can to prevent epileptic seizures. Supporters of electroshock declare electroshocks safe.

In a newspaper interview, Annette Brühl, deputy chief physician at the Psychiatric University Clinic in Zurich, stronghold of electroshock in Switzerland using the Thymatron® System IV device from the manufacturer Somatics, summed up the arguments of the supporters of electroshock. A "minimal amount of current" triggers a generalised, i.e., large epileptic seizure, thereby "kick-starting" the brain: "We tickle the brain" (cited in Badische Zeitung, 2021), she explained to the readership. This would release a lot of neurotransmitters, trigger growth processes in the brain, reverse brain shrinkage associated with depression and a certain "rigidity" in the brain and make it more flexible for new processes. After a series of twelve electroshocks, potential memory problems lasting two to three weeks would disappear completely within two to six weeks.

In the "Patient Information" of Thieme Compliance GmbH, the electroshock ally Here Folkerts informs the treatment candidates that in (so-called) mental illnesses, the nerve tissue in certain parts of the brain changes. The brain changes caused by electroshock would presumably be a regeneration of the brain – electroshock acts as a fountain of youth, so to speak, and refusing electroshock would worsen the original problems. Some psychiatric clinics write of a favourable influence of electroshocks on hormones and messenger substances, and that contact points of the nerve cells would increase as a result (Folkerts, 2018).

One of the world's greatest proponents of modern electroshock is Harold Sackeim, former head of the Department of Biological Psychiatry at the New York State Psychiatric Institute. In his article "Modern electroconvulsive therapy: Vastly improved yet greatly underused", he sees electroshock as a universal fountain of youth:

"Several long-term follow-up studies have suggested that patients who receive ECT have reduced mortality of all causes relative to non-ECT control patients" (2017, p. 779)

Sackeim's knowledge did not come by chance. He has received fees from LivaNova (vagus nerve stimulation), MECTA Corporation (electroconvulsive therapy) and Neuronetics (transcranial magnetic stimulation) for his consulting work. In the past, he also advised or received research support from the relevant companies Brainsway,

Cyberonics, Cervel Neurotech/NeoStim, Magstim, NeoSync and NeuroPace, as well as the pharmaceutical companies Cambridge Neuroscience, Eli Lilly & Co, Forest Laboratories, Hoffmann-La Roche, Interneuron Pharmaceuticals, Novartis International, Pfizer, Warner-Lambert and Wyeth-Ayerst.

However, people who administer electroshocks are warned not to expose themselves to electroshock, too, by touching the person being shocked. FBI Medizintechnik – Fred Berninger Importe OHG from Taufkirchen (Germany), general representative of Somatics, LLC for Germany, Italy, Austria, Switzerland, Benelux and Eastern Europe – warns accordingly in its operating instructions for the market-leading electroshock apparatus Thymatron® System IV: "During defibrillation, do not touch the patient, the device, or the bed" (2005, p. 6).

What responsibility does the manufacturer take for potential damage?

Somatics, LLC, the manufacturer of the standard electroshock apparatus (beside Mecta), clarifies in its product description what responsibility it assumes for the use of its Thymatron® System IV:

"Somatics, LLC disclaims responsibility for any medical complications directly or indirectly resulting from the use of this product" (undated).

Author's Note

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