

Fighting Schizophrenia: Beginnings of Somatic Treatments in Psychiatry in Riga Sarkankalns Hospital in the 1930s

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Abstract: *In the 1930s the first somatic treatments of schizophrenia were developed – insulin coma treatment in 1933 (by Manfred Sakel, Vienna) and chemical-convulsive therapy in 1934 (by Ladislav Meduna, Budapest). In 1936, Hermanis Saltups from the Riga Sarkankalns Hospital, Psychiatric Clinic of University of Latvia, went to the Neuropsychiatric University Clinic of Vienna to study the insulin coma treatment. At the end of 1936, the insulin coma treatment was started in the Riga Sarkankalns Hospital. The chemical-convulsive therapy was started in 1937.*

From the beginnings of the insulin coma treatment the main complications, even deaths, were associated with protracted or prolonged coma, when, despite glucose administration, patients could not be revived. In the Sarkankalns hospital, after accidental 47 hour long insulin coma, the mental health of a patient dramatically improved and the psychotic symptoms disappeared. These findings encouraged psychiatrist Verners Kraulis to use protracted coma for therapeutic purposes. He developed a method that allowed prolonging the coma for 12 hours and more. The modified treatment was used in treating schizophrenics who failed the classical shock treatment and were considered otherwise untreatable.

Keywords: *chemical-convulsive therapy, insulin coma treatment, psychiatry, shock therapy*

Introduction

At the beginning of the 20th century, most psychiatrists believed that schizophrenia was an endogenous ‘heredodegenerative’ disease and therefore not curable (Meduna, 1956). In the 1930s, the first somatic treatments of schizophrenia, the so-called shock therapies, were developed – insulin coma treatment (ICT) in 1933 and chemical-convulsive therapy (CCT) in 1934. Both therapies were taken up enthusiastically because they provided the first virtual cure for previously hopeless patients, who suffered from this major mental disorder. The new methods spread explosively through the leading psychiatric clinics all over the modern world.

Origins of ICT and CCT

ICT was developed by the Austrian psychiatrist Manfred Sakel (1900–1957) in the Neuropsychiatric University Clinic of Vienna in 1933. The idea that insulin could be used in treatment of mental disorders goes back to the second half of the 1920s, when Sakel worked in the Lichterfelde Sanatorium, Berlin, a private clinic for the treatment of opiate addiction. He found that the treatment of morphine addicts with small doses of insulin relieved abstinence symptoms, such as vomiting and diarrhea, increased weight and decreased the craving for opiates. Precise dose of insulin was unknown and some patients during the treatment unintentionally slipped into hypoglycemic coma. Sakel observed that previously mentally disturbed, agitated patients after recovering from coma became calm and he speculated that the same treatment might also tranquilize psychotic patients. In 1933, he returned to Vienna and began to study insulin coma effect on patients suffering from schizophrenia (Shorter, 1997). Sakel based his theory on belief that schizophrenia might result from malignant but less robust brain cells and he sought to destroy those cells by stress of hypoglycemia (Fink, 1990).

In 1935, he published his results of a trial with 50 patients, who experienced their first episode of schizophrenia. Sakel (1935, p. 111, cited in Shorter, 1997, p. 210) claimed an improvement rate of over 88%. This publication was followed by rapid and widespread implementation of ICT throughout the mental hospitals elsewhere. The enthusiasm started to diminish in the 1950s when the efficacy of ICT was questioned by publications, criticizing that ICT may lack evidence and rationale (Ackner *et al.*, 1957; Bourne, 1953). Starting in 1952 (Purvins

& Purvina, 2002), ICT was progressively replaced by chlorpromazine, the first antipsychotic drug. According to a comparative study, published in 1958, chlorpromazine had the same efficiency, but was safer, easier to administer, and better suited to long-term management (Fink *et al.*, 1958). Thus the decline of ICT coincided with the rise of modern psychopharmacology.

Another shock therapy, CCT, is considered the forerunner of electroconvulsive therapy (ECT), a method still being used to deal with several mental states, despite the controversial results (Read & Bentall, 2010). CCT was developed by the Hungarian neuropathologist Ladislas Meduna (1896–1964) at the state asylum in Budapest-Lipótmező in 1934. Before that he had studied postmortem brain specimens of epileptic and schizophrenic patients and had observed the differences in glial cells between the two groups (Kragh, 2010).

From that time on, I was convinced that there is a biological antagonism between the process which produces epileptiform attacks and the process which produces schizophrenia. I had only to find a convulsant drug which could be safely used in human beings.
(Meduna, 1956, p. 78)

Injections of camphor-in-oil were known to induce epileptic seizures, but in 1934 a safer and more predictable drug, pentylenetetrazol (Cardiazol, Metrazol), was introduced. Meduna began Cardiazol injections for treatment of schizophrenia. By 1936 he had already treated 110 patients; half of them went into apparent remission. CCT was practiced until the introduction of ECT by Ugo Cerletti (1877–1963) and Lucio Bini (1908–1964) in Rome in 1938 (Shorter, 1997).

Introduction of ICT and CCT in Riga

In the late 1930s, world's scientific journals were overwhelmed with implausibly optimistic reports from mental hospitals where the new-found methods were successfully applied. The first results of shock treatment seemed to be so efficacious and promising that the whole International Congress of Psychiatrists held in Switzerland in the spring of 1937 was dedicated to Sakel's new treatment of insanity (Sakel, 1956). Among the participants of the congress was the Latvian psychiatrist Hermanis Saltups (1901–1968), assistant in the Department of Psychiatry at the University of Latvia. By then, Saltups had already introduced both shock therapies in the Riga Sarkankalns Hospital, the psychiatric clinic of University of Latvia (Saltups, 1937a).

The Department of Psychiatry at the University of Latvia was founded and ran by the professor Hermanis Buduls (1882–1954) (Viksna, 2002). Buduls was a progressive psychiatrist, who followed contemporary research in psychiatry and implemented novel methods into the clinical practice in Riga Sarkankalns Hospital. In 1923, he introduced malaria fever treatment for general paralysis of the insane in Sarkankalns hospital (Buduls, 1926) – the first biological treatment in the history of psychiatry, developed by the Austrian psychiatrist Julius Wagner-Jauregg (1857–1940) (Whitrow, 1990). Buduls encouraged his students to work in the field of science and gain experience in the leading mental facilities abroad. In 1936, persuaded by Buduls, Saltups went to the Neuropsychiatric University Clinic of Vienna to study the methods of shock therapies (Saltups, 1943). In December 6, 1936, after returning to Latvia, Saltups injected five patients suffering from schizophrenia with insulin, and with this began the “insulin era” in the Riga Sarkankalns Hospital. The CCT was introduced in the spring of 1937 (Saltups, 1937a).

Soon after the ICT was started, newspapers picked up the newfangled shock therapies with exaggerated favor.

An absolutely novel method is used for treating mental illnesses in the Sarkankalns hospital and laudable results are achieved. A number of feeble-minded, previously doomed to spend the rest of their lives in aberration of the mind living in lunatic asylums, are completely recovered and returning to life and work. There are no consequences of the disease and they can return to their previous duties, even those demanding a certain degree of responsibility (Briva Zeme, 1937a, p. 79).

A few weeks later, Buduls, in an interview for the same newspaper, tried to reduce this all-embracing but unfounded optimism. He evaluated this method of treatment quite cautiously.

We are facing an unreasonably positive hearsay about practicing insulin shock... I must remind you that the state of unconsciousness is a critical condition and we can't expose each and every patient to it. A strong and otherwise completely healthy organism is needed to cope with up to 50 comas repeatedly. The method by itself is very difficult and requires the highest degree of cautiousness from the doctor and medical staff. The patient during the unconsciousness must be continuously monitored by a nurse to ensure that the coma is not overly deep. (Briva Zeme, 1937b, p. 7).

A pressing problem in Latvian healthcare was the congested patient flow in the mental health system. At the end of the 1920s, the need for inpatient treatment exceeded the capacity of psychiatric facilities over 25% (Buduls, 1929) and sometimes the acutely ill despite the need for inpatient care had to be rejected. Therefore, the Riga City Council was greatly interested in the development of the promising shock therapies.

The Riga City Council supports a large number of mentally ill. There are more than 900 patients in the Sarkankalns hospital alone. It is in the best interests of the city to help them to return to work as soon as possible or at least return to their families. (Jaunakas Zinas, 1937, p. 7).

Formation of the insulin unit

The Sarkankalns hospital opened the so-called “insulin beds” for the new treatment. But soon physicians insisted that shock therapy must be provided in a special ward (Saltups, 1937b).

ICT required special equipment, such as nasogastral tubes, syringes, sphygmomanometers, lumbar puncture kits, etc. and a wide spectrum of medications (e.g., coramin, adrenalin, camphor) to manage possible complications. A separate, quiet unit, isolated from the rest of the hospital, was essential (Saltups, 1937a). ICT also required highly qualified medical staff consisting of doctors, nurses and ancillary personnel. In March 1937, the Riga City Council sponsored formation of the first insulin unit with 14 beds, finding an opportunity to treat and consequently discharge patients with schizophrenia. The method demanded considerable financial resources and a co-payment from the patients was required: 3 Lats per day from residents of Riga, 6 Lats from nonresident patients (*Latvijas Kareivis*, 1937, p. 3).

The insulin unit became comparable and even better equipped than the departments in somatic hospitals. The implementation of insulin units brought psychiatry closer to the mainstream medicine and psychiatrists became from supervisors and controllers to “real medical doctors” (Doroshov, 2007). In his memories of the early beginnings of ICT, Sakel described his attempts to liberate psychiatric hospitals from the reputation of lunatic asylum.

I wished it to be not merely a place of transit for new mental patients on their way to an asylum, but, like any other hospital, a place where possible cures might be achieved (Sakel, 1956, p. 24).

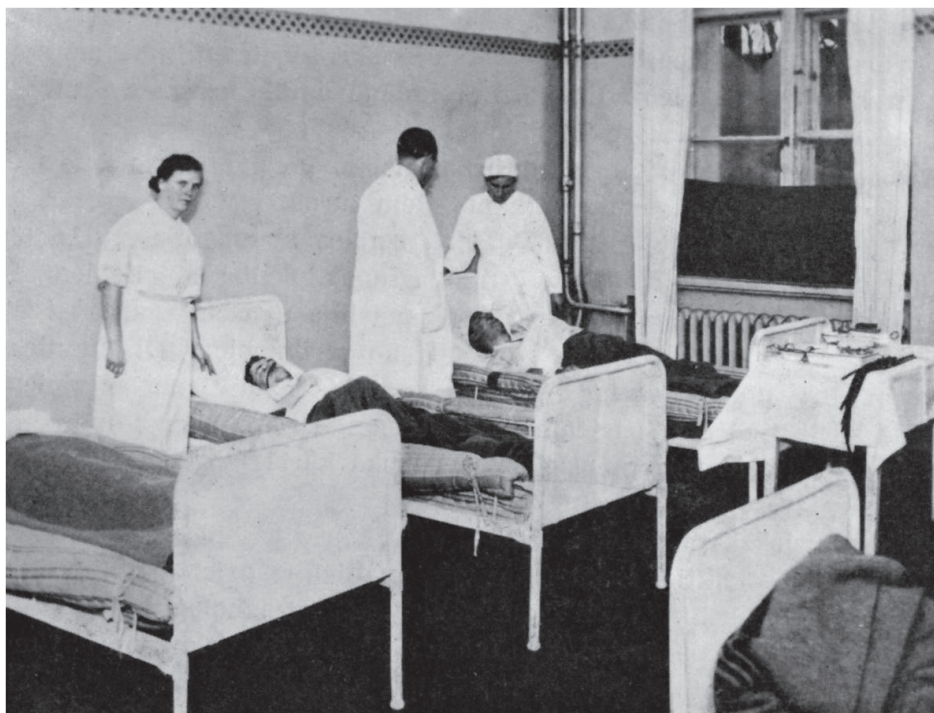


Figure 1. Insulin unit (Buduls, 1938, p. 241).

Looking back on the development of the Riga Sarkankalns Hospital, Buduls (1938, p. 243) highlighted “Today the equipment of several departments does not differ from the departments of other hospitals where active treatment is administered”.

Clinical practice of shock therapies

The techniques of Cardiazol convulsive and insulin shock treatment were described in detail for the Latvian audience by Hermanis Saltups in *Journal for Latvian Doctors* at the end of 1937. In the Riga Sarkankalns Hospital the classical method of ICT, the so-called ‘Sakel’s treatment’, was used. It consisted of three phases (initially of four phases, but later the method was simplified) – adaptation phase, shock phase, and polarization phase (Sakel, 1956). Although the method was originally elaborated by Sakel, it was slightly changing with each psychiatrist and their experience in administration of the ICT. Saltups (1937a, p. 308), describing the method used in the Sarkankalns hospital, admitted, “any regularity is hardly achievable and the experience is critical”.

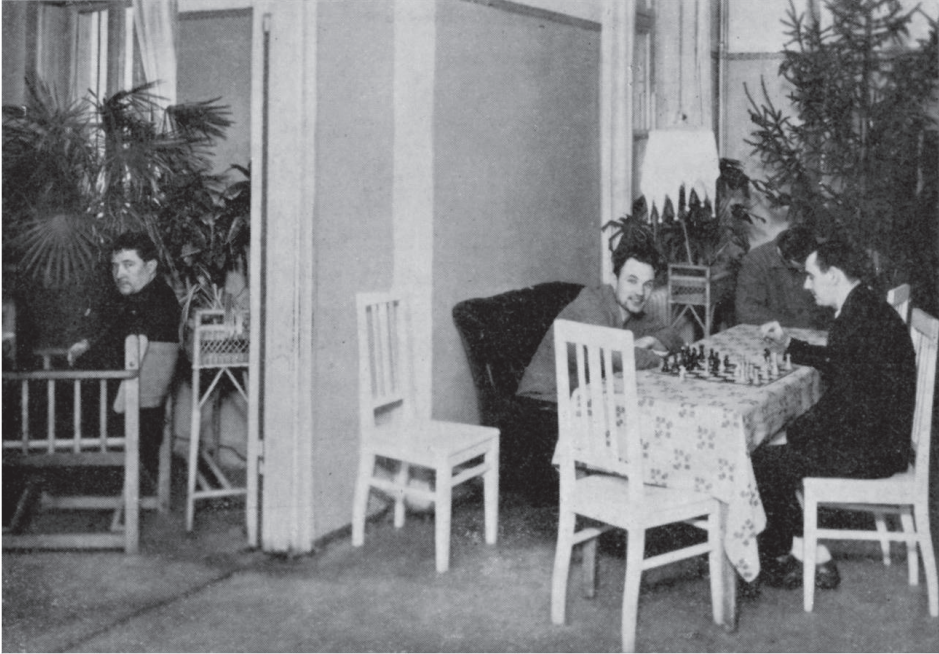


Figure 2. Patients resting after shock treatment (Buduls, 1938, p. 243).

During the adaptation phase the dose of insulin was gradually increased (5 to 15 units daily), till the ‘shock dose’ was reached. Shock dose was the amount of insulin needed to induce hypoglycemic shock. Shock phase could arouse two types of hypoglycemic reactions: coma, the so-called ‘wet shock’ (accompanied with profuse sweating), and convulsions, the so-called ‘dry shock’. Both ‘wet’ and ‘dry’ reactions were considered therapeutic (Saltups, 1937a). Sometimes during the ‘wet shock’, patients slipped into deep coma with suppressed brain stem reflexes, such as corneal and gag reflexes. While in coma, the vital signs of the patients (heart rate, blood pressure, respiration and body temperature) were closely monitored. Typically the patient was put in hypoglycemic coma for up to two hours and then revived with glucose solution, administrated through nasal tube or, less commonly, intravenously. The number of induced comas and the length of the treatment were not explicit; they varied widely depending on the experience of psychiatrist. The shock phase continued till there was a satisfactory psychiatric response or the patient was considered untreatable, usually after 50–60 comas. The final phase of Sakel’s treatment was polarization, when subcoma doses of insulin were injected, followed by sugar solution orally. The length of the polarization phase was 6–8 days and after that the treatment was finally finished. In total, the length of classical ICT in the Sarkankalns hospital varied from 3 to 12 weeks.

In April 20, 1937 the CCT was started in the Sarkankalns hospital. CCT was administrated alone or in combination with ICT. The patients received injections of seizure-provoking medicine – Cardiazol. Cardiazol provoked a classical epileptic fit approximately 30 seconds after the injection. Seizures were provoked every second or third day and were repeated 2–30 times.

After 10 months of experience, Saltups (1937a) reported the first results of shock treatments used in the Sarkankalns hospital. 60 patients were exposed to ICT and CCT. The therapy was considered accomplished for 53 of them. For those who underwent complete course of therapy, full remission was obtained in 30% (16), partial remission – 19% (10), and “social” remission – 21% (11). The intervention had to be interrupted in the rest of cases; one patient died during the treatment. Saltups concluded that the treatment was more effective in patients with new onset of the disease (history less than 6 months) – 88% of them were discharged home. However he admitted that “fresh” patients had an overall better prognosis and more often went into spontaneous remission without any treatment necessary.

Development of protracted shock method

Psychiatrists had to cope with a great deal of complications during the shock treatment, some of them were extremely dangerous and life threatening. From the beginnings of the ICT the main complications, including death, were associated with protracted or prolonged coma, when, despite glucose administration, patients could not be revived (Billig & Sullivan, 1942). Few months after the ICT was started in Riga the first protracted shock was observed (Saltups, 1937a). Luckily, this hazardous condition had an unexpected outcome – after accidental 47 hour long insulin coma, the mental health of a delusional patient improved dramatically and the psychotic symptoms disappeared.

These findings encouraged Verners Kraulis (1904–1944), a promising assistant of the Department of Psychiatry, to use protracted coma for therapeutic purposes. Kraulis (1938) developed a modification of the classical Sakel shock treatment that allowed prolonging the coma for 12 hours and more. This method included administration of sugar in doses (10–15 grams every two hours) small enough to maintain the coma but sufficient to avoid serious disturbances of vital functions. The patients awoke when larger amounts of sugar were administered. For greater efficiency, Kraulis also modified the Hagedorn-Jensen method for blood sugar measurement, thus he was able to determine blood sugar in 14 minutes. Kraulis

pointed out that blood sugar level is not always correlated with the depth of coma and observation of vital signs was determinative.

The first results of protracted insulin shock therapy were surprisingly successful: Kraulis (1938) did not report any fatal outcome, while four out of six patients, who had previously failed treatment with the classical ICT and CCT, improved considerably. After few protracted shocks, these patients improved enough to be discharged and return to work. Kraulis (1938, p. 328) admitted that “the dangers of the method are still far from clear” and suggested that the method should be used with great caution. Given the positive experience, Kraulis expected that one of the main advantages of protracted shock could be shortening the length of stay in the hospital.

But if artificially protracted shock is as safe as it seems now to be, one might consider treating even acute cases in this way since the period of treatment might thus be shortened considerably (Kraulis, 1938, p. 328).

At the end of the 1930s several papers about protracted, mostly unintentional, comas were published (Binzley & Anderson, 1938; Horwitz *et al.*, 1938; O’Neill, 1938). Kraulis had turned this dangerous side effect into a novel treatment of schizophrenia. His work was published in prestigious medical journals (Kraulis, 1938; 1939) and attracted widespread interest. The method of protracted shock was referenced in a number of scientific papers and was considered as apparently safe. (O’Neill, 1938; Billig & Sullivan, 1942) Kraulis (1940) noted that Sakel’s classical ICT gave good results in patients with the new onset of the disease. But if the disease persisted for more than five years, a satisfactory result was almost impossible. “He is like a living dead separated from the outside world by a wall, spending decades in psychiatric hospitals or home-nursing,” wrote Kraulis (1940, p. 65) when describing the schizophrenic with a long medical history. Sakel usually criticized attempts to modify his original method, but agreed with Kraulis on the value of prolonged shock, especially in the treatment of well-fixed delusions (Last, 1938).

By 1940, 79 chronic patients in the Sarkankalns hospital underwent protracted shock therapy (Kraulis, 1940). According to Kraulis, full remission was obtained in 22% (17), but partial remission in 25% (20) of them. Patients from these two groups were discharged home. The mortality rate of 2.5% (2) was estimated by Kraulis as fairly low and comparable with mortalities during simple surgeries.

The question of how to treat the mentally disordered in an ethically acceptable manner remains controversial (Fennell, 1996). Kraulis was aware of the ethical

issues regarding the inability of a patient to give voluntary consent for advisable therapy. He asked for informed consent from the patient's relatives, explaining all the risks and side effects. Kraulis (1940, p. 70) claimed "They understand that the best for those otherwise untreatable patients is to give a possibility to return to the normal life, even if you have to risk a life".

In 1941, after the invasion of Latvia by Nazi Germany, Kraulis was forced to leave the Riga Sarkankalns Hospital and the University of Latvia (Stradins, 2004), supposedly due to his social democratic views. Kraulis was transferred to practice psychiatry in a province hospital in Liepaja. Dr. Verners Kraulis died in 1944 weakened by pulmonary disease (*Latvijas Arstu Zurnals*, 1944). During the Second World War, German forces executed 501 patients in the Riga Sarkankalns Hospital (Viksne, 2007, p. 335) and in 1942 the hospital was shut down (Buduls, 1978), thus putting a bitter end to the "insulin era" in the Riga Sarkakalns Hospital.

Role of somatic treatments in the history of psychiatry

The articles published in the 1930s do not give a full insight into the risks and benefits of shock treatments. Presumably, considering the all-embracing enthusiasm, unfavorable results were hushed up while successful cases were exaggerated. The methods were empirical, supported by clinical observations as the only source of evidence. Consequently, the shock treatments have to be seen in historical context as an episode in the history of psychiatry where each new treatment was more effective and less dangerous than the former. Without evaluating the ethical issues and the real efficiency of ICT and CCT, this paper acknowledges the distinctive contribution of shock therapies in the development of Latvian psychiatry. The establishment of somatic treatments stimulated the process of 'medicalization' of psychiatry in Latvia and legitimated psychiatry as a field of medicine, where cure can actually be achieved.

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