



## CARETAKER OF THE SKIN

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# Lucja Frey (1889–1942): Life destroyed by the Holocaust—on the 70th anniversary of her death

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**Abstract** Lucja Frey was the first to explain the pathogenesis of the auriculotemporal syndrome, and the syndrome is recognized today as the Frey syndrome. Patients with this disease are subjected to paroxysmal paraesthesia of half of the face combined with sweating and redness. This syndrome can be found in the differential diagnosis of contemporary dermatology. Among others, it is differentiated from food allergies. The life and scientific career of Lucja Frey was brutally interrupted by the tragic times of the Holocaust.

## Introduction

The first half of the 20th century was marked by the stigma of war, conflicts that took a heavy toll of human lives. It was also an unfavorable time for fruitful clinical and scientific work of many prominent European doctors, especially those of Jewish origin who experienced difficulties, suffering, and humiliation during World War II.<sup>1</sup> One of these physicians was the Lvov neurologist Lucja Frey. The auriculotemporal nerve syndrome described by her has an essential meaning as the standard diagnosis, used in the clinical practice of various medical specialties. Owing to the symptoms of this syndrome, which is also called the Frey syndrome, patients are treated not only in neurologic,<sup>2,3</sup> otolaryngologic,<sup>4,5</sup> and surgical,<sup>6-10</sup> centers but also in dermatologic centers.<sup>11-15</sup>

The Frey syndrome is found in the differential diagnosis of contemporary dermatology due to the occurrence of sweating disorders and vasomotor disturbances of the face. Patients with this syndrome, while eating certain foods (eg, acidic, bitter, or hot), may

experience noticeable sweating and redness of one half of the face. Frey syndrome is also differentiated from food allergies. Recent reports indicate the possibility of the co-occurrence of this syndrome and neurofibromatosis-1.<sup>3</sup> One of the methods of medical treatment is the subcutaneous injections of botulinum toxin.<sup>16</sup>

The earliest biographic notice of Lucja Frey comes from Eufemiusz Herman (1892–1968).<sup>17,18</sup> In recent years, many contributions that bring the figure of Lucja Frey closer have appeared in neurologic and otolaryngologic journals.<sup>19-26</sup> The most complete of the published studies of life and professional activity of Lucja Frey to date is the book by Mirjam Moltrecht.<sup>27</sup>

## Life, professional development, and the tragic fate of Lucja Frey

Lucja Frey (Figure 1) was born on November 3, 1889, in Lvov, one of the most important scientific and cultural centers of prewar Poland (from 1918 to 1939 in the Second Polish Republic, now western Ukraine). She was the daughter of the building contractor Szymon Symcha Frey

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**Fig. 1** Lucja Frey in 1918. The photo from the first page of “Index Lectionum” of Lvov University No. 4977 (from the Archives of the University of Warsaw).

and Dina Weinreb.<sup>27</sup> The Frey family belonged to the assimilated Jews of Lvov, and Lucja indicated Polish as her mother tongue.

In the years between 1896 and 1900, she attended a Catholic elementary school in the Benedictine monastery of Lvov. Then, between 1900 and 1907, she attended the Kämmerling Goldblatt Jewish School for Girls. She passed the Matura exam on October 3, 1907, as an external student in the Franz Joseph Gymnasium in Lvov.<sup>27</sup> She began the study of philosophy at the University of Lvov in 1908; however, later she changed her course of study to mathematics. In 1913, after graduation, Lucja Frey passed her teaching exams.

She started medical studies in Lvov in 1917 (Figure 1). As a result of the Polish-Ukrainian war, she abandoned her studies for the 1918–1919 academic year and worked during that time in the neuropsychiatric ward of the State Hospital of Lvov under the tutelage of Kazimierz Orzechowski (1878–1942), who 2 years later (in 1920) became the head of the university neurologic clinic in Warsaw.

After finishing four semesters of medical studies in Lvov, Lucja Frey continued her studies in Warsaw from 1921. Between June 1922 and May 1923, she passed a series of final exams with excellent marks, including one from neurology with Professor Orzechowski. After graduation on June 11, 1923,<sup>27</sup> she worked as a younger assistant in the neurologic clinic of Kazimierz Orzechowski, who was the founder of the so-called Second Warsaw Neurological School.<sup>28</sup>

Lucja Frey returned to Lvov in 1929. She married an attorney, Mark (Mordechaj) Gottesman. From May 1929,

she worked in the Jewish Community Hospital, located on Rappaport Street 8 in Lvov. At that time, she lived with her husband and in-laws on 12 Zygmuntowska Street. She gave birth to a daughter, Danuta, in 1930.<sup>27</sup> The Frey family moved to a new apartment located on 35 Sykstuska Street in 1932. Information on the Frey’s second child, Jacob, born in 1939, comes from only one source, the testimony of Lucja Frey’s sister-in-law Hedwa Balat (nee Gottesman) made in 1955 in the Yad Vashem Institute.<sup>27</sup> After the outbreak of World War II and the march of the Soviet Army into Lvov in September 1939, Marek Gottesman was arrested by the Soviet intelligence agencies (NKVD), charged with counterrevolutionary activity, and most probably murdered.<sup>27</sup>

Another family drama happened after the outbreak of the German-Soviet war in June 1941. After the occupation of Lvov by the German army, Lucja Frey, together with her family, similar to 136,000 other people of Jewish nationality, was forced to live in the Lvov Ghetto (Ghetto Lemberg). There, she worked in the II Ghetto Polyclinic on Zamarstynowska Street 112.<sup>27</sup> In 1942, German authorities organized special operations to reduce the number of Jewish people in Lvov. In March 1942, approximately 15,000 people were transported to the Belzec death camp, and 50,000 more of Lvov’s Jews were transported to this death camp in August 1942. After this operation, the ghetto had a population of only 50,000 people of Jewish nationality.

In November 1942, an iron fence was added to contain the residents of the ghetto. In the same month, the Germans organized the “Great Action,” taking away approximately 7,000 Jews to death camps from Lvov and the surrounding areas. A typhus epidemic broke out in the ghetto that autumn, and 50 people died each day. In January 1943, the German authorities transformed the district into a labor camp (Judische Lager), subjecting it to the direct command of the SS units. Another 10,000 Jews were taken away to concentration camps. The final liquidation of the Lvov ghetto took place in the first half of June 1943, when the remainder of the surviving Jews were taken to concentration camps located on the premises of the General Government.<sup>29</sup>

The last evidence that Lucja Frey was alive was from April 1, 1942. This is supported by the completed personal questionnaire together with the application for a work permit card (Fragebogen zur Meldung der erstmaligen Heilberufe) with the number 144, issued by the German authorities.<sup>27,30</sup> At that time, Lucja Frey lived on Balonowa Street 6. On August 20, 1942, almost all patients and the medical staff of the ghetto clinic (at least 400 people) were murdered.<sup>27</sup> Lucja Frey was murdered then or was deported between August 10 and 22, 1942, to the Belzec death camp. Some biographers<sup>18,19,20,28</sup> provide the year 1943 as the year of Lucja Frey’s death (in June 1943, the residents of the Lvov Ghetto were liquidated). Nothing is known about the fate of Lucja Frey’s family, her daughter Danuta, son Jacob, her parents, or her in-laws.

## Scientific achievements and an explanation of the auriculotemporal syndrome

Lucja Frey published many valuable original papers and case studies. Among the most important of her works are the ones on the effect of plant poison on spinal cord degeneration, brain stem topography, amyotrophic lateral sclerosis (Charcot disease), aneurysms of the plexus of the medulla, cysts of brain ventricles and frontal lobe tumors, and retrosplenial tumors.

The publication on the auriculotemporal syndrome, known now in the medical literature as the Frey syndrome, was published in 1923 in the Polish journal *Polska Gazeta Lekarska*<sup>31</sup> and then in the same year in the French *Revue Neurologique*.<sup>32</sup> This was at the same year in which she had graduated in medicine! The case of the patient described by Lucja Frey was presented at a meeting of the Neurological Association in Warsaw on January 20, 1923.<sup>33</sup> It is worth mentioning the description of a patient who, due to a gun shot wound of the face, experienced symptoms that could not be qualified under the existing etiologic classification of disease entities.

A 25-year-old man was wounded on the left side of the lower mandible by a rifle bullet at the end of 1920. Although the wound was superficial, the man lost consciousness directly after being shot and did not know how he got to the hospital. There, after regaining consciousness, he noticed that the left side of his face was strongly swollen. After a week, he was taken ill with relapsing fever and 4 weeks later with typhus. Throughout the duration of the diseases, the left cheek was constantly swollen, and approximately 4 months after being shot, pus began to leak from his ear.

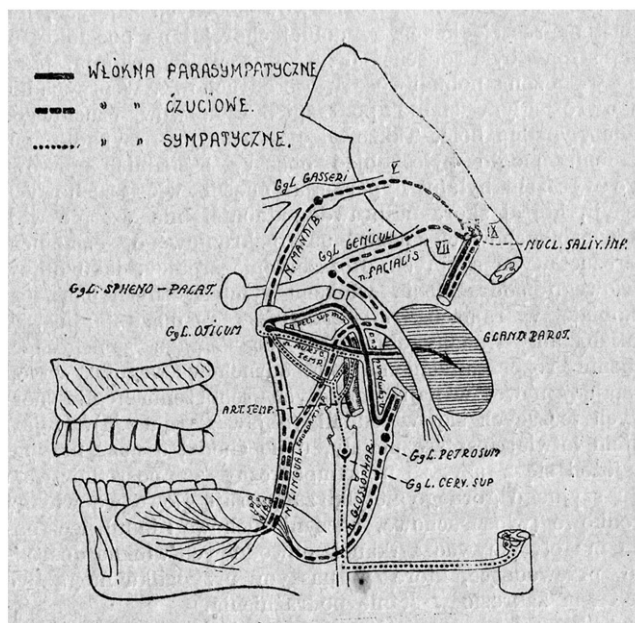
In March 1921, an otorhinolaryngologist diagnosed these symptoms as a fistula in the internal auditory meatus, however, without further damage to the tympanic membrane. An incision of the place of the first wound was made, the swelling began to recede, and his face returned to its normal state. Approximately 1 month after the surgery, the patient noticed that while eating, the left side of his face was sweating and he simultaneously experienced the feeling of warmth in this area. With time, this sweating intensified and within a year became so significant that it began to draw attention. The patient felt no other symptoms and sought medical advice because of shame because people thought that he ate so voraciously.

Before 1920, the man had not experienced any sicknesses. The Bordet-Wassermann test was non-reactive. Hyperesthesia existed on his left cheek in the area of the auriculotemporal nerve. When the patient ate or made a sucking motion, such as while eating a candy, redness of the left side of the face appeared, along with the feeling of warmth in this area, and sweating in the form of a fine, thick dew which after a longer meal intensified such that the sweat trickles down the face, begun within a minute.<sup>31,32</sup>

Lucja Frey did not only limit herself to the proposition of calling this disease entity as the auriculotemporal nerve syndrome but also provided a precise explanation, illustrating it in a graphic manner (Figure 2). She gave the patient pharmacologic provocation tests. She stated that the injection of 1 mg of atropine caused a significant dryness of the mouth, a lack of redness of the skin of the lower mandible, and eliminated sweating. An injection of 1 mg of physostigmine caused paleness and a reduction of warmth of the left side of the face. Lucja Frey's curiosity in the case study of the patient with symptoms of auriculotemporal nerve irritation manifested itself not only in its accurate presentation but also in a systematic pathophysiologic explanation with reference to all the observed pathologic symptoms.

This description of the clinical manifestations presented by Frey was not the first in the medical literature. Similar descriptions had been presented by Duphenix, Brown-Sequard, Baillarger, and Henle.<sup>34</sup> Frey's reports concerning the auriculotemporal nerve syndrome, beginning in 1923,<sup>31,32</sup> are regarded as the first explanation of the basis of this syndrome in the world literature. She was the first person to acknowledge the occurrence of the symptoms of this syndrome as a disorder of both the sympathetic and parasympathetic nerve fibers.<sup>31,32</sup>

Today, the auriculotemporal nerve syndrome is defined as persistent, fits of paraesthesia of the face combined with its sweating and redness. These fits are spontaneous or may be provoked by eating. The cause of this syndrome, whose pathogenesis was explained by Frey, is usually caused by an injury (traumatic, inflammatory, or congenital) of the auriculotemporal nerve within the parotid



**Fig. 2** Diagram of autonomic innervations of parotid gland by Lucja Frey. Reprinted from: Frey L. Przypadek zespołu nerwu usznoskraniowego. *Polska Gazeta Lekarska* 1923;41:708–10.



gland. The pathophysiology of this syndrome is complex and determined by the anatomic relations of the sensory and the autonomic innervation of the head (cranial nerves V and IX). Taking these anatomic conditions into consideration, Lucja Frey pointed out that the disorder of the auriculotemporal nerve may be visible due to the disorders of the senses, sweat secretion, and qualitative and quantitative disorders in saliva secretion.<sup>31,32</sup> She postulated the existence of mechanisms of excessive sweating while eating certain types of food through the same reflex arc that regulates the secretion of saliva from the parotid gland. Frey also noticed that in the sympathetic innervation of the facial skin, the fibers extending along the temporal artery entering from the upper cervical ganglion that reaches the otic ganglion are also involved (Figure 2).<sup>31</sup>

The eponym “Frey syndrome” was introduced to the medical literature by Higier<sup>35</sup> in 1926 and in 1932 by Bassoe.<sup>36</sup> Currently, different eponyms, describing the auriculotemporal nerve syndrome, exist in the medical literature. In recognition of earlier descriptions of this syndrome, it is also sometimes called Baillarger syndrome, Frey-Baillarger syndrome, or Dupuy syndrome.<sup>37</sup>

## Conclusions

Although Lucja Frey’s scientific achievements were not as extensive as the achievements of other eminent authors of the 20th century, each work published by her brought a new quality into the world of medicine. The works concerning the auriculotemporal nerve syndrome made her name famous in the medical literature. She had an important influence in the creation of the fundamentals of the Polish neurology. Herman, analyzing Lucja Frey’s temperament, underlined her “ant-like diligence,” precision, and insistent aspiration to broaden the cognition and to find an explanation for the examined phenomenon.<sup>18</sup> Her character traits reflected themselves in her critical analysis of the symptoms combined in the picture of the auriculotemporal syndrome.

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