Józef Brudziński (1874–1917)

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Abstract

Józef Brudziński's (1874–1917) contribution to the field of neurology is noteworthy and undeniable. His organizational efforts and research activity have earned him the name of the "father of the Polish paediatrics". He described the Brudzinski reflex and Brudzinski neck sign. He proved that the symptoms of these conditions were caused by nerve root irritation and elevated CSF pressure. He also described cheek phenomenon and symphyseal sign.

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Józef Brudziński (Fig. 1) was born on 26 January 1874 in a Polish landed gentry family in Bolewo. The area, although historically Polish, at that time was ruled by the Russian Tsar. Brudziński graduated from a gymnasium (type of grammar school) in Warsaw. Between 1891 and 1894 he studied medicine in Dorpat, where he passed his

doctoral exams. At that time this University was the only in the Tsar's Empire with German language of instruction, and this was a more convenient solution for the Polish students. After German teachers were removed from the University in a process of Russification, the quality of education fell dramatically and Brudziński moved to Moscow to continue his medical education, which he completed in 1897. This University had Russian lecturers but of a higher level of education.

He came back to Warsaw in 1898 to start work at the Jewish Hospital. He trained in paediatrics both in Poland and abroad. During his European travels, which took him mainly to Austria-Hungary, Switzerland and France, Brudziński not only extended his knowledge of paediatrics but also watched and learnt how European hospitals worked. His stay in Graz was particularly productive, as he started working with Theodor Escherich (1857–1911). Brudziński found bacteria *Proteus* in infants' feces [1]. He also suggested that infant diarrhea could be treated with the antagonistic bacteria strain, *Lactobacillus* [2]. The method was later popularized by Ilja Miecznikov (1845–

Fig. 1. Józef Brudziński (1874–1917).

1916). In Paris, he studied under the supervision of Jacques-Joseph Granscher (1843–1907) and Antoine Marfan (1858–1942).

Between 1900 and 1904 Brudziński worked in a Warsaw orphanage, and after that he was involved in setting up Anna Maria Hospital in Łódź, where he was later appointed head physician (1905–1910). The way the hospital was organized was widely acclaimed and in 1907 at the Lviv Convention of Doctors and Natural Scientists, Brudziński was awarded the gold medal for hospital organization. In 1908, Brudziński established the paediatric division of the Łódź Medical Society and was a co-founder of the first paediatric journal in Eastern Europe, “Przegląd Pedyatryczny” (“Paediatric Review”). While in Łódź, he wrote his first paper on neurological symptoms, in which he described a symptom present in children affected by hemiplegia: the flexion of a healthy limb elicits the straightening of the affected limb while the healthy limb remains flexed. The sign was later proved to be positive in meningitis and is now known as the Brudzinski reflex [3, 4]. In the next paper, he described another symptom, which is

today known as the Brudzinski neck sign. In patients with meningitis, the flexion of the neck towards the chest causes the flexion of lower limbs and adduction of upper limbs to the body [5, 6]. In 1909, he was awarded a PhD in medicine from the Jagiellonian University in Kraków, without having to take any additional exams. Brudziński wanted to find the cause of the symptoms he discovered. Conducting experiments on animals, together with Napoleon Cybulski (1854–1919), he proved that the symptoms were caused by nerve root irritation and elevated CSF pressure [7]. Brudziński’s explanation of the 1st and 2nd symptom turned out to have been proximate to what Connolly had suggested in 1946 [8], the latter being the theory considered to be valid [9–11].

Since 1910, Józef Brudziński had been setting up the Karol and Maria hospital in Warsaw, where he became head doctor in 1913. In subsequent papers he described other meningitis symptoms: Brudzinski cheek phenomenon and symphyseal sign [12, 13], which he defined as flexion of the forearms after applying pressure on the cheek under the zygomatic bone and flexion of the lower limb after applying pressure on the pubic symphysis respectively. Both cheek and symphyseal signs have a historical meaning and are not in use anymore.

During the First World War in 1915, Warsaw came under the Prussian rule, which improved the condition of the Polish educational system. Brudziński took this opportunity to restore university education in Poland. He was particularly involved in the re-establishment of the medical faculty. On 2 November 1915, at the request of the Polish authorities, the Prussian governor appointed Brudziński as rector of the University of Warsaw. He also held the post in the subsequent academic year.

Józef Brudziński was also involved in activities that could restore the Polish statehood. He was a member of the Provisional Council of State, a body set up under German and Austria-Hungarian auspices, whose aim was to further the cause of Poland’s independence.

Józef Brudziński was married to Cecylia and they had two sons, Tadeusz and Zygmunt. His very promising research career was suddenly stopped by his premature death. He underwent surgery for increasing kidney pain. However, his renal insufficiency and uremia worsened and on 18 December 1917 Józef Brudziński died at his home in Warsaw.

Disclosure Statement

The author has no conflicts of interest to disclose.

References

- 1 Brudzinski J: Ueber den Emulsionszustand des Fettes in der Gärtnerschen Fettmilch. *Therapeutische Monatshefte* 1899;13:478–486.
- 2 Brudzinski J: Ueber das Auftreten von *Proteus vulgaris* in Säuglingsstühlen nebst einem Versuch der Therapie mittelst Darreichung von Bakterienkulturen. *Jahrbuch für Kinderheilkunde* 1900;62:469–484.
- 3 Brudzinski J: O odruchu drugostronnym na konczynach dolnych u dzieci. *Przegląd Lekarski* 1908;43:112–118.
- 4 Brudzinski J: Über die kontralateralen Reflexe an den unteren Extremitäten bei Kindern. *Wiener klinische Wochenschrift* 1908;8:255–261.
- 5 Brudzinski J: O nowych objawach w zapaleniu opon mózgowo-rdzeniowych u dzieci. *Przegląd Pediatryczny* 1909;1:360.
- 6 Brudzinski J: Un signe nouveau sur les membres inférieurs dans les méningites chez les enfants (signe de la nuque). *Arch Med Enf* 1909;12:745–752.
- 7 Brudzinski J: Badania doświadczalne nad odruchem drugostronnym i odruchem obustronnym (objaw karkowy). *Gazeta Lekarska* 1910;45:1228–1235.
- 8 O'Connell D: The clinical signs of meningeal irritation. *Brain* 1946;69:9–21.
- 9 Ward MA, Greenwood TM, Kumar DR, Mazza JJ, Yale SH: Josef Brudzinski and Vladimir Mikhailovich Kernig: signs for diagnosing meningitis. *Clin Med Res* 2010;8:13–17.
- 10 Valkenburg A: Kernig's and Brudzinski's sign; in Koehler PJ, Bruyn GW, Pearce JMS (eds): *Neurological eponyms*. New York, Oxford University Press, 2000, pp 154–159.
- 11 Verghese A, Gallemore G: Kernig's and Brudzinski's signs revisited. *Rev Infect Dis* 1987;9:1187–1192.
- 12 Brudzinski J: O nowej postaci objawu karkowego w zapaleniu opon mózgowo-rdzeniowych u dzieci, szczególnie gruzliczych: a) o objawie policzkowym b) o objawie spojenia lonowego. *Gazeta Lekarska* 1916;51:171–173.
- 13 Brudzinski J: Über neue Symptome von Gehirnhautentzündung und -reizung bei Kindern, insbesondere bei tuberkulösen. *Berliner klinische Wochenschrift* 1916;53:686–690.