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History of Neurology

Jules Tinel (1879–1952): Beyond the eponym, the man and his forgotten neurological contributions

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INFO ARTICLE

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ABSTRACT

The trauma of World War I had a lasting impact on clinician and physiologist Jules Tinel (1879–1952). His treatment of peripheral nervous system injuries led him, in 1917, to describe the eponymous sign that he linked to activity of the sympathetic nervous system. Among the sequelae of nerve injuries, he was confronted with causalgia that he attributed, here again, to the autonomic nervous system, the main focus of his laboratory research throughout his career. Tinel's sign became so well known that it eclipsed the originality of his seminal descriptions of exertional headache and of hypertensive emergency caused by pheochromocytoma, which could also have been associated with his name. He was always able to marry his clinical practice of neurology and psychiatric consultations with his anatomicopathological, physiological and pathophysiological research, which was based on his daily practice as a physician. At the same time, he directed the work of numerous assistants in his research laboratory, which has since been unjustly forgotten. Several hundreds of scientific publications, including three seminal works, bear witness to his intense activity, which he combined with a genuine talent for teaching and making his findings accessible to a wider public. Those publications alone would fully justify the historical value of extending his renown beyond the existing eponym.

1. A life dominated by medicine and world wars

To reduce a man to his eponym is to neglect the originality and diversity of a life's work. Most of the articles mentioning Jules Tinel (1879–1952; Fig. 1) or Tinel's sign (or test) offer only a concise summary of his life, career and work [1,2]. Here, for the first time, is presented an expanded biography, thus exhuming Tinel from the purgatory of oblivion, as justified by his full and varied career.

His grandfather, Jules Hélot (1814–1873), was a surgeon at the hospital in Rouen, and his father, Charles-Armand Tinel (1831–1914), was an anatomy professor at the Rouen medical school and a surgeon. Jules Tinel, born in Rouen on 13 October 1879, was the fifth generation of physicians in this Norman medical family [3]. After starting his medical studies in Rouen, he was ranked 321st out of 332 successful candidates (702 overall) in the competitive exam for *externes* at the Paris hospitals in 1900 [4]. He received his initial training in neurology from Louis Landouzy (1845–1917) at Hôpital Laennec in 1903, followed by Joseph Dejerine (1849–1917) at

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Fig. 1 – Jules Tinel in 1909 as an *interne* at La Salpêtrière. (Enlargement of a photo in the *Album photographique de l'internat*, BIU Santé Paris, public domain).

Fig. 2 – Tinel's first wife, Louise-Marianne Giry-Wissembourg, was the only woman (back row) in this photo taken at Hôpital Saint-Antoine in 1908–1909. (From the *Album photographique de l'internat*, BIU Santé Paris, public domain).

La Salpêtrière in 1904. Both teachers considered him an "excellent externe". Ranking a brilliant third on the competitive *internat* exam in 1905, he chose to work as an *interne* (houseman) under these two teachers in 1908 and 1909 [4]. In 1910, Arnold Netter (1855–1936) trained him in infectious pathology and completed his apprenticeship in pathological anatomy. It was in Netter's department that he met Louise-Marianne Giry-Wissembourg (1873–1914; Fig. 2), the first Frenchwoman to pass the exam for *internes*. He married her shortly thereafter[1] and helped her prepare her thesis on the first recognized widespread epidemic of poliomyelitis (Heine–Médin disease) in the spring of 1909 in Paris [5].

During his time as an *interne* under Dejerine, on 6 May 1909, he proposed a semiological innovation that made it possible to distinguish organic anesthesias from hysterical anesthesias, using two tuning forks ('diapason') vibrating at different frequencies. The first tuning fork produced a vibratory sensation, the second an auditory impression. He cited a case of complete anesthesia in one arm due to a traumatic lesion of the brachial plexus, where the vibrations of the tuning fork placed on a metacarpal were not perceived, but the sound transmitted by "bone conduction of sonic vibrations to the labyrinth" was [6]. In contrast, in the case of hysteria, nothing can be perceived [6].

Landouzy presided over the jury for Tinel's own thesis [7]. The subject, '*Radiculitis and Tabes: Radicular lesions in meningitis, pathogenesis of tabes*', was suggested by Dejerine, while Tinel (Fig. 3) proposed a pathophysiology for the symptomatology of tabes, continuing the work of Jean Nageotte (1866–1948) [8]: "Having encountered a certain number of these cases, which are rare and in which syphilitic radiculitis precedes or accompanies the progression of tabes, we have attempted the anatomical and experimental study of inflammatory processes of radicular sheaths" [7]. He considered these sheaths to be the initial localization of tabes, especially at the posterior roots, in the extension of the posterior columns. Tinel also insisted on the following: "The existence of an arachnoid sheath [around the roots] is a crucial point for us"; he viewed lesions during tuberculous or other types of meningitis and during tabes as being dependent on this. Concerning this point, he also remarked that there was a "very special accumulation from a kind of decantation of cerebrospinal fluid elements in these sorts of cisterns that constitute the lumbar and sacral radicular sheaths" [9]. But for him, gravity was not the only explanation, as he saw the same accumulations at the cervical roots. Sharing the opinion advanced by Nageotte, he considered "the radicular nerve and its membranes as an efferent pathway for lymphatic circulation of the central nervous system. It appears very probable that the cerebrospinal fluid flows slowly, filtered by the lymphatic interstices and fissures along or across the ganglion and continuing with the serous sheaths of nerves" [7]. This concept of diffuse peripheral absorption, mentioned by Tinel but then forgotten for decades, is once again now generating discussion 115 years later [10,11]. In 1911, Tinel autopsied a tuberculous patient treated by Landouzy and his *interne* Pierre Gastinel (1884–1963) for sciatica and found a tuberculous radiculoneuritis that, for him, confirmed the pathophysiological propositions in his thesis [12]. In 1912 [13] with Louis de Gonzague Sauvé (1881–1960) and in 1913 [14] with Dejerine, he arrived at the same conclusions to explain tabetic gastric attacks. On 28 May 1914 before the *Société de Neurologie*, Tinel described how he had obtained experimental confirmation of

[1] Jean Tinel (1912–1999) was Jules Tinel's son from this marriage. In 1916, Tinel married Marie-Juliette May and had three other children.