William Barnett Warrington (1869–1919)

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Abstract

William Barnett Warrington (1869–1919) was a physician and physiologist working in Liverpool, United Kingdom, at the end of the 19th and beginning of the 20th centuries. His training included periods at the National Hospital for the Paralyzed and Epileptic, Queen Square, London, and in the Liverpool laboratory of Charles Scott Sherrington. He investigated structural alterations in nerve cells following various nerve lesions and helped to develop laboratory facilities to support clinical practice through the Pathological Diagnosis Society of Liverpool. His clinical interests were broad, but his main focus seems to have been in disorders of the peripheral nervous system. He published many papers, encompassing descriptions of Charcot-Marie-Tooth disease, brachial plexus paralyses (possibly including neuralgic amyotrophy), and, in the context of the First World War, traumatic peripheral nerve injuries. He may have described cases of Guillain-Barré syndrome prior to the eponymous description but despite being familiar with the technique of lumbar puncture, he did not report cerebrospinal fluid findings in these patients.

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Introduction

The year 2019 marks the centenary of the death of William Barnett Warrington, a name which will be unfamiliar to most clinicians, even those familiar with his spheres of interest, neurology and neuroscience, and those practicing in his native Liverpool. It has been noted that during his lifetime Warrington made contributions to both physiology of the nervous system [1] and descriptive clinical neurology [2]. The centenary of his death marks an appropriate moment to reappraise Warrington's contributions. These are potentially many, particularly in the clinical sphere [3]. Here, we present a brief biography before focusing on 2 illustrative aspects of Warrington's career: his period of basic research in the laboratory of Charles Scott Sherrington and his clinical interest in disorders of the peripheral nervous system. We suggest that he made worthy contributions in the fields of both contemporary neuroscience and neurology.

Biography

As the University of Liverpool was not inaugurated until 1914, Warrington had to travel away from his home city for his medical studies, initially to Owens College in Manchester [4], and then to the Rotunda Hospital in Dublin. He gained his basic medical qualification in

Manchester in 1891 and also took the London Bachelor of Medicine degree in 1893. His junior appointments included one at the National Hospital for the Paralysed and Epileptic, Queen Square, London, the leading neurological institution in the country, in 1894. According to his obituary, he obtained a doctorate (MD) from London in the same year, but it has not been traced. After a period in laboratory research (ca. 1898–1904), by the early 20th century he was practicing in Liverpool, initially with an honorary appointment at the Stanley Hospital, then as honorary physician at the Northern Hospital and as demonstrator in pathology at University College Liverpool, later lecturer in clinical medicine and neuropathology at the University of Liverpool. He gained the Membership of the Royal College of Physicians of London: his obituary [5] states this was in 1905 but the post-nominal is to be found on his publications dating back to 1898. The Fellowship of the Royal College of Physicians followed, in 1905 according to Munk's Roll [6]. He took an active role in the work of the Liverpool Medical Institution, presenting papers and demonstrations, and acting as Honorary Librarian (1907–1908) and Vice-President (1913) [7].

Neuroscience

Charles Scott Sherrington (1857–1952) was appointed the Holt Professor of Physiology in Liverpool in 1895, a position he retained until 1913 when he was appointed Waynflete Professor of Physiology in the University of Oxford. The Liverpool years have been described as the most productive of Sherrington's life, as here he undertook studies including those of sensory dermatomes, reciprocal inhibition, and decerebrate rigidity which culminated in his seminal work, *The Integrative Action of the Nervous System* (1906) [8]. Sherrington worked with various people, some as collaborators and others who (in the words of Denny-Brown) “published work from his laboratory under his guidance”; among the latter, we find William Warrington [9].

Warrington single-authored 4 papers published in the *Journal of Physiology* between 1898 and 1904 on the subject of structural alterations in nerve cells following various nerve lesions. For example, he found that lesions of posterior and anterior roots produced recognizable cellular changes in the corresponding segment of the spinal cord. In all but the second of these papers, Warrington expressed his obligation and thanks to Professor Sherrington.

The 3 later papers (1899, 1900, 1904) are all designated as coming from the Thompson Yates Laboratories in Liverpool. This facility was opened in 1898 and was the location for research in both physiology, under Sherrington, and pathology and bacteriology, including tropical medicine, under Professor Rubert Boyce (1863–1911). The laboratories issued a house journal, the *Thompson Yates Laboratories Report*, from 1898 to 1903, edited by Boyce and Sherrington “with the co-operation of” (amongst others) Warrington, who is listed under both “Pathology and Bacteriology” and “Neurology.” From 1905, following the opening of further purpose-built laboratory space, the journal became the *Thompson Yates and Johnston Laboratories Report*, again edited by Boyce and Sherrington “assisted by” (amongst others) Warrington. The exact form of the co-operation and assistance provided by Warrington is not clear.

In the copies of these journals available in the University of Liverpool Library Special Collections and the Liverpool School of Tropical Medicine, Warrington only appears in Volume II, dated 1898–1899. This includes (pages 79–89) a co-authored paper on a case of “myelopathic albuminuria,” probably myeloma, which was later also published elsewhere. In the report of the “Department of Histology” (page 91), it is stated that Mr. E.E. Laslett “investigated, in conjunction with Dr. William Barnett Warrington, the pathological anatomy of a spinal case of much neurological interest” subsequently published in *Brain* [10]. There is also a report (pages 119–121) from “The Pathological Diagnosis Society of Liverpool” written by Warrington as the “Director.” The purpose of the society was to put the facilities of a clinical laboratory at the disposal of local medical practitioners, to which end instructions were given about the submission of samples for diagnosis of tuberculosis, diphtheria, and typhoid, as well as tissues for tumor analysis. Nothing further is heard of either Warrington or this society in subsequent editions of the journal.

Neurology

Although apparently active in Sherrington's laboratory between 1898–1904, Warrington was also producing clinical papers throughout this period, published in *Brain*, the *British Medical Journal*, and the *Lancet*, as well as in the house publication of the Liverpool Medical Institution, the *Liverpool Medical-Chirurgical Journal*.

These and his subsequent clinical publications (numbering over 60 in total, not including duplications, to our

knowledge) cover a broad range of both neurological and general medical conditions [3], and include some significant clinical neurological descriptions.

Warrington's chief interest appears to have been in disorders of the peripheral nervous system. For example, his earliest clinical paper, published in 1892, was on "Erb's juvenile paralysis" [11]. Later works include publications on cases of Charcot-Marie-Tooth disease (1901) [12] and paralyzes of the brachial plexus (1906) [13] in collaboration with the orthopedic surgeon Robert Jones (later knighted). In 1903, Warrington published on "uncommon forms of neuritis of the upper limb" [14]. In this paper, there may be a description (Case 2) of the condition which later came to be known as neuralgic amyotrophy, brachial neuritis, or Parsonage-Turner syndrome.

Acute ascending paralysis had been a recognized disease category at least since the time Landry's cases were published in 1859 [15]. Warrington published papers on this subject in 1903 and 1914 in the *Liverpool Medical-Chirurgical Journal* [16, 17]. His differential diagnosis of rapid and widespread paralysis encompassed acute toxic polyneuritis, acute poliomyelitis, and Landry's paralysis. One patient developed proximal limb weakness which steadily progressed upwards segment by segment, with onset 2 weeks after a febrile illness. Four days after symptom onset, the patient could not lift his legs from the bed, the shoulder girdle muscles were affected and the tendon reflexes were lost, but the paralyzed muscles "acted strongly to faradism." In retrospect, it is possible that some of these patients might now be characterized as having Guillain-Barré syndrome [18], but publication in a provincial journal of limited circulation suggests that their import had not been widely appreciated. Had Warrington submitted to the *Lancet* or *Brain*, journals in which he frequently published during this era [3], his contribution might have been more widely acknowledged.

The absence of cerebrospinal fluid analysis in these cases of ascending paralysis is disappointing, particularly since Warrington was familiar with the procedure of lumbar puncture: he demonstrated stained preparations of the cerebrospinal fluid obtained by lumbar puncture in cases of different varieties of meningitis at the Liverpool Medical Institution in 1904. Although lumbar puncture was first developed by Quincke in the 1890s, it was not apparently performed at Queen Square before 1910 [19, 20], so Warrington may have been "ahead of the curve" in adopting this procedure.

During the Great War, Warrington served as a captain in the Royal Army Medical Corps. As was the case for a number of other neurologists [21], Warrington's war experience included the observation of traumatic peripheral nerve injuries, which lead to a paper on "musculo-spiral" (radial) nerve injuries [22]. Again, the placement of this paper in the *Liverpool Medical-Chirurgical Journal* may account for the fact that this work is not widely known.

Assessment

Having survived the conflict of the War, Warrington fell victim to influenza complicated by pneumonia, and died on 2nd February 1919, aged 49. He is commemorated on War memorials in both Liverpool and Manchester, as well as at the Liverpool Medical Institution. His obituary in the *British Medical Journal* noted that "As a physician, Dr. William Barnett Warrington was in the front rank in all that related to nervous disease" [5].

Disclosure Statement

The authors have no conflicts of interest to declare.

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