

Research Article - History of Anatomy and Embryology

Attribution of the “sign of the trapezius muscle hypotrophy” to the clinician Cesare Federici: historical evidence in the scripts of Umberto Gabbi and Fabio Rivalta

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Cesare Federici (Serravalle di Chienti, Macerata, 1838 – Firenze, 1892) was one of the most important Italian clinicians of the XIX century. Federici studied medicine at the Universities of Camerino, Bologna, and Florence. He graduated in 1858, when he was twenty-two (Tucci, 1995). He received his medical training in Pavia, with Luigi Concato (1825-1882), and in Bologna, with Giovanni Brugnoli (1814-1894), both illustrious physicians. In the second half of XIX century, Federici became a pioneer of deductive clinical reasoning, founded on observation, logic and critical thinking, as well as a sharp expert in medical semiotics.

Three years after he gained his medical degree, he was appointed Full Professor at the University of Camerino (1863). In 1866, he became Professor of Medical Pathology and Clinical Propedeutics in Camerino. In 1870 he was in Palermo, where he performed many anatomical dissections, assembling a prestigious anatomical collection that he partially brought with himself to Florence, where he moved in 1883 as Clinical Professor of Medicine. In Florence, at the *Istituto di Studi Superiori Pratici e di Perfezionamento* – founded in 1859 by the temporary government (Governo Provvisorio Toscano) in order to restore Florence’s cultural primacy (Rogari, 1984) – Federici was highly productive. The *Istituto* was articulated into four sections: Medicine and surgery; Legal studies; Physiology and philology; Natural sciences (Neri Serneri, 2004). In particular, the section of medicine and surgery was a direct product of the important school in Santa Maria Nuova city hospital, and was based in that hospital. Federici was an expert in abdominal assessment employing the transmission of heart sounds on the stomach wall (Federici, 1881). He produced excellent clinical descriptions for cases involving the digestive, nervous, and respiratory system. As far as the respiratory system is concerned, and with particular reference to tuberculosis – a very common disease in the XIX century – Federici’s contributions to the Italian medical scientific literature were relevant. A specific modification of the trapezius muscle was named after him, Federici’s “segno del cucullare”, *i.e.* trapezius muscle sign. Still

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nowadays, the “sign of Federici” indicates the impingement of the trapezius muscle caused by hypotonicity and hypotrophy, in combination – or not – with the sign of Boeri, *i.e.* the painful impingement of the trapezius muscle.

While afterwards some physicians questioned the attribution of the abovementioned sign to Federici, two illustrious clinicians, Umberto Gabbi and Fabio Rivalta, never doubted his paternity in their writings (Lippi, 1996). Professor Umberto Gabbi graduated in Florence in 1882 in natural sciences, and in 1885 in medicine. His mentors were the physiologist Luigi Lucani (1840-1919), the clinician Cesare Federici and the hygienist Paolo Mantegazza (1831-1910). Umberto Gabbi worked as a doctor at the reception ward in the Arcispedale S. Maria Nuova, in Florence, and as honorary assistant of Federici in the Medical Clinic of Florence (Crespi, 1998). Subsequently, Gabbi was promoted full professor of medical pathology at the Regia Università in Messina. In his well-known essay *Semeiotica, fisica e funzionale: breve compendio dei metodi di esame degli infermi*, Gabbi clearly noted that Federici was the first to observe the deeper curving and the edge lowering of the trapezius muscle in patients with tuberculosis at the apex of the lung (“Federici richiamò per il primo l’attenzione su un incurvamento maggiore ed un abbassamento del margine del cucullare nei soggetti colpiti da tubercolosi dell’apice” - Gabbi, 1912). Fabio Rivalta (Faenza 1861 - Rimini 1939), a professor at the Regia Università in Bologna and director of the Cesena hospital (1901 – 1906), is widely acknowledged as the author of the Rivalta test employed to distinguish, among effusions, between transudates and exudates (De Castro, 1959). Rivalta, in an interesting letter to a colleague, Teseo Del Guerra (who graduated in medicine in Florence on July 13, 1887, worked as a medical officer for thirty-one years in Santa Maria del Monte, near Pisa, and died on February 7, 1935) rejoices at the appropriate attribution of the sign of the trapezius hypotrophy, in the case of tuberculosis, to Federici (I celebrate “di cuore che Ella (*i.e.* Del Guerra) abbia rivendicato al nostro amato e grande Maestro, il compianto Federici, il suo sintoma dell’ipotrofia del trapezio nella tubercolosi polmonare...” Prof. Dr. Fabio Rivalta, Professor at the Regia Università in Bologna, Formerly Head Physician at the Cesena Hospital). In the same letter, Rivalta significantly recalls to have attended Federici’s lesson in Florence on March 15, 1886, the lesson in which Federici described the sign of the trapezius. Rivalta reminds to the colleague Del Guerra that Federici’s students always referred to the Federici’s sign for what others unfairly attributed to someone else (“... noi della scuola del Federici abbiamo sempre chiamato segno del Federici quello che ingiustamente vuole attribuirsi ad altri”). This March 1886 lesson is included in the collection “Conferenze cliniche del prof. C. Federici, R. Istituto di Studi Superiori e di Perfezionamento di Firenze, 1885-6”, carefully edited by Del Guerra. In particular, on page 189, it reads: “Nei processi tisiogeni oltre che gli sternocleidomastoidei sono denutriti anche i margini del trapezio corrispondente all’apice ammalato” [“in the pulmonary tuberculosis the sternocleidomastoid, as well as the edges of the trapezius corresponding to the affected apex, are undernourished”].

In conclusion, this contribution acknowledges a great Italian physician, Cesare Federici, his teaching and clinical ability, and his eponymous sign. A master of pathology and semiotics, he committed himself, fully and successfully, also to the lay society of his times, as illustrated by his appointments as Florence town councilor and member of the Board of Education (Consiglio Superiore della Pubblica Istruzione).

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