Heubner's Artery

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Neurologists associate the name of Heubner with the artery which supplies the anteromedial part of the head of the caudate nucleus and antero-inferior internal capsule. Heubner (fig. 1) was a fine example of the 19th century generalist; he extended academic knowledge by energetic, original research and instigated vital medico-social provisions for sick children.

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Heubner's vascular study [1, 2] was published in 1872. He had injected individual arteries of 30 human brains using the dye 'Berlin blue'. Although this limited technique could not show the dynamic circulation, the detailed vascular anatomy was demonstrated including recurrent branch of the anterior cerebral artery. But, he claimed in 1874, a pial network or 'Kanalnetzwerk' through which all hemispheric arteries could be filled. Shortly after, Charles Edward Beevor (1854–1908) injected simultaneously the main cerebral arteries and contradicted Heubner's idea of an anastamotic net. Beevor more accurately thought the arterioles entering the cortex were end-arteries, though he accepted anastomoses between adjacent territories (watershed areas) [3].

Anatomists describe Heubner's artery (fig. 2) as a branch arising from the A2 (less often A1) segment of the anterior cerebral artery 2–5 mm distal to the anterior communicating artery. It travels caudally to enter the perforate substance medial to the perforating branches of the middle cerebral artery. Variants [4] include duplication,

and rarely an additional Heubner's artery arising from an accessory middle cerebral artery. It supplies the inferior part of the head of the caudate nucleus and the anterior limb of the internal capsule. There is considerable overlap between the three arteries supplying the head of the caudate nucleus: the lateral and anterior lenticulostriate, and Heubner's recurrent artery [5]. Heubner's anatomical legacy is important for surgery, particularly for anterior cerebral complex aneurysms [6]. Occlusions can produce caudate-striatal infarction [7].

Fig. 1. Otto Heubner.

Fig. 2. Diagram of anterior cerebral circulation.

Heubner

Johann Otto Leonhard Heubner (1843–1926) was a German paediatrician, born in Mühltröf in the state of Saxony. He was a student of Karl Wunderlich (1815–1877), to whom he was assistant for several years in Leipzig. He obtained his doctorate in 1867 and studied in Vienna, before becoming professor of medicine at the University of Leipzig in 1873, and in 1876, director of the district polyclinic. Heubner increasingly specialised in children's diseases and in 1891, was appointed to the new chair of paediatrics in Leipzig. Heubner moved in 1894 to the paediatric clinic at the Berlin Charité, run by Eduard Heinrich Henoch (1820–1910); there he discovered inferior water supplies, poor hygiene and infection. With the help of bacteriologist Robert Koch (1843–1910), Heubner controlled malnutrition and introduced anti-infection measures so that within 1 year the infant mortality in the paediatric clinic fell from 80 to less than 10%.

Heubner was renowned as the first German professor of paediatrics. He worked on infant feeding with Max Rubner, creating the 'nutrition quotient' – the number of calories per kg per day required. His diverse interests included the early and successful therapeutic use of Behring's diphtheria antitoxin. This fight against diphtheria and the low death rate in the Leipzig paediatric clinic attracted public acclaim and his clinic became the 'Mecca

of paediatrics.' In 1896, he discovered meningococci from the cerebrospinal fluid of a case of epidemic meningitis [8]. Although described earlier by Allbutt in 1868, syphilitic cerebral endarteritis was called Heubner's endarteritis after his own pathological studies [9]. He wrote extensively and published his *Lehrbuch der Kinderheilkunde* in two volumes between the years 1903 and 1906. It became the contemporary paediatric bible. In 1898, he associated pineal tumour with precocious puberty in a boy. With Herter, his 1909 article 'On severe digestive insufficiency in children past infancy', described coeliac disease (gluten enteropathy: Heubner-Herter disease).

In 1876 he married Martha Haussner and had two sons and two daughters. Physically small, Heubner was said to be a strong-minded personality full of vitality and humour; he was a lover of music and art.

He dealt affectionately with children but was not a popular teacher, though excellent at case presentations, and insistent on accurate observations from his students. His research and clinical work continued until 1913, when a few weeks after his 70th birthday he retired, to be succeeded by Adalbert Czerny (1863–1941).

Heubner died aged 83 in Loschwitz. In 1999, the various paediatric clinics at the Charité, dedicated to the treatment of sick children, were combined to inaugurate the Otto Heubner Centre for Paediatrics and Adolescent Medicine.

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