Call-Exner bodies and the scientists behind them

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This is a concise review on Call-Exner bodies, pathological structures seen in gynaecological practice, with a historical spotlight on the scientists behind them.

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Call-Exner bodies is the name given to small follicular structures seen in granulosa cell tumours (GCTs), as they resemble the immature follicles first described by Call and Exner in the ovaries of rabbits in 1875.[1]

GCTs are rare sex cord stromal tumours of the ovary, made up of granulosa cells (sex cord) and stromal cells (thecal cells or fibroblasts). The tumour often secretes oestrogen.[2,3] It is formed of amorphous, eosinophilic, periodic acid-Schiff-positive hyaline material surrounded by granulosa cells,[1] and appears as rosettes of granulosa cells surrounding an eosinophilic material (Fig. 1).

Call-Exner bodies are the hallmark of GCTs, occurring in 30 - 60% of cases.[2] They are small follicle-like structures that punctuate the sheet-like arrangement of the tumour cells.

Since not all GCTs harbour Call-Exner bodies, pathological diagnosis should not rest on this finding alone. GCTs have several pattern subtypes, and immunohistological staining with inhibin has proved useful for identifying these tumours. In contrast to GCTs in adults, Call-Exner bodies may not be seen in the juvenile subtype.[2,3] Call-Exner bodies can also be detected by fine-needle aspiration cytology.[4]

Call-Exner-like areas can be seen in other tumours such as endometrioid carcinoma of the ovary, but in this case the tumour may contain mucin, which is not a feature of GCTs. Inhibin and calretinin are negative in endometrioid carcinomas and epithelial membrane antigen is positive, distinguishing them from GCTs.

Call-Exner-like areas can also be seen in gonadoblastomas[5] and sclerosing stromal tumours of the ovary.[4]

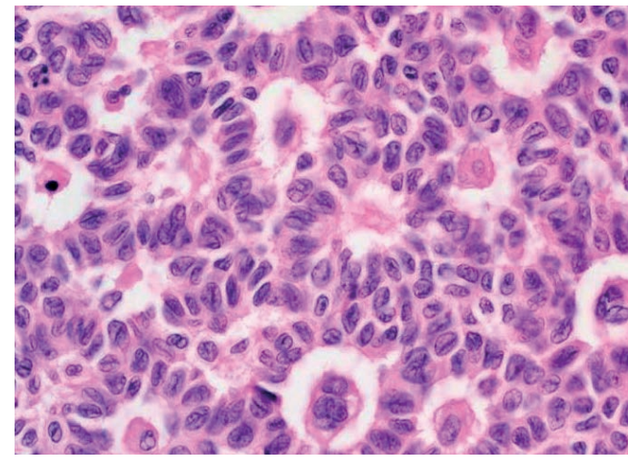

Fig. 1. Call-Exner bodies (courtesy of Professor Klaus Dietmar Kunze, Institut für Pathologie, Universitätsklinikum Dresden, Germany).

Emma Louise Call (1847 - 1937)

Emma Louise Call (Fig. 2) was one of the first woman doctors in the USA. After receiving her medical degree from the University of Michigan in 1873, she went to Vienna as Siegmund Exner's postgraduate student. She returned to Boston and practised as an obstetrician for more than 40 years. In 1884 she became the first woman to be elected to membership of the Massachusetts Medical Society. Her description of Call-Exner bodies was her only publication.[6]

Fig. 2. Emma Louise Call, 1847 - 1937 (courtesy of the University of Michigan student portrait collection, Bentley Historical Library, University of Michigan, USA).

Sigmund (or Siegmund) Exner (1846 - 1926)

Sigmund Exner (Fig. 3) was an Austrian physiologist and psychologist.[7-9] He came from a family with a passion for the sciences, and his father and three brothers were famous professors.

After Exner received his doctorate in 1870 he worked at the physiological institute at the University of Vienna, Austria, where he was influenced by Josef Breuer (1842 - 1925) and Sigmund Freud (1856 - 1939).[8] He held several important scientific offices, including President of the Medical Society of Vienna.

Sigmund Exner is remembered for his important contributions to comparative physiology and brain research. In addition to Call-Exner bodies, other medical eponyms such as Exner's nerve and Exner's plexus are linked to his name.

Exner hypothesised about what has become known as 'Exner's area', a discrete area within the brain located in the left middle frontal gyrus, which he believed was dedicated to the function of writing. However, it was thought by some authors that the dissemination of this hypothesis was partly due to the influence that Exner and his family had in the scientific community at the turn of the 19th century.[7]

Fig. 3. Sigmund Exner, 1846 - 1926 (from Geetha and Nair,[3] reproduced with permission).

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