



Discovery of *Aspergillus* as a Human Pathogen

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In the midst of the 1789 French Revolution, Jacques Thibault, a 22 year old soldier experienced severe facial pain with the elevation of his cheekbone and the protrusion of his right eye. When physicians perforated Thibault's alveolar process, a fungal mass was found in the maxillary sinus. Resection could not be performed due to excessive bleeding. Twenty-two days later, the fungal mass had grown and filled part of his mouth and his entire right nostril, causing difficulty in swallowing and breathing.

Thibault was admitted to a Paris Hospital where the fungal mass was excised by a surgeon and white heat cautery was applied to destroy any remnants of the fungus. Small fungal growths reappeared three to four weeks later at the back of the sinus and the soft palate; all were cauterized using a branding iron. Mr. Thibault left the hospital 134 days after admission with no subsequent recurrences.

Thibault's case was the first recorded infection attributed to *Aspergillus*. In the years following Thibault's case, other case reports implicated *Aspergillus*. The earliest description of pulmonary aspergillosis was published in 1842 by physician, John H. Bennett. Bennett noted the presence of a fungus in the lungs of a post mortem patient with pneumothorax. The fungus was described as "Numerous jointed transparent tubes, here matted together, there isolated...mingled with round or oval corpuscles, which, however, were larger and more developed."

Aspergillus was named by Pier Antonio Micheli, an Italian priest and biologist in 1729 when cataloging molds. The molds resembled an aspergillum, a holy water sprinkler (from Latin Spargere-to sprinkle). In 1863 the species *fumigatus* was first described by physician Georg W. Fresenius. "From my studies of isolates obtained from human lung infections... I had the chance to learn more about this fascinating species of *Aspergillus*.... The species we describe here is very different to *A. glaucus* and also from all other [*Aspergillus*] species which have been described so far." Fresenius named the new species *A. fumigatus*. He observed that the spores had a green pigmentation and had no septated fertile hyphae or conidiophores. *Fumigatus* is derived from Latin "fumigave" which means smoky referring to the smoky blue-gray mycelium.

Subsequent cases of *Aspergillus* infections over the next several years showed the most frequent species of *Aspergillus* responsible for human infection was *A. fumigatus*. From 1920 to 1965, cases of disseminated aspergillus infections were implicated in the heart and CNS in addition to the sinuses and lungs. Potassium iodide was used as therapy from the start of the twentieth century until the end of World War II. In the 1940s, sulphonamides and the new "wonder drugs" of antibacterial agents were used to treat fungal infections with inconsistent results. The discovery and formulation of nystatin and amphotericin in the 1950's led to the first effective antifungal agents against Aspergillosis.



References

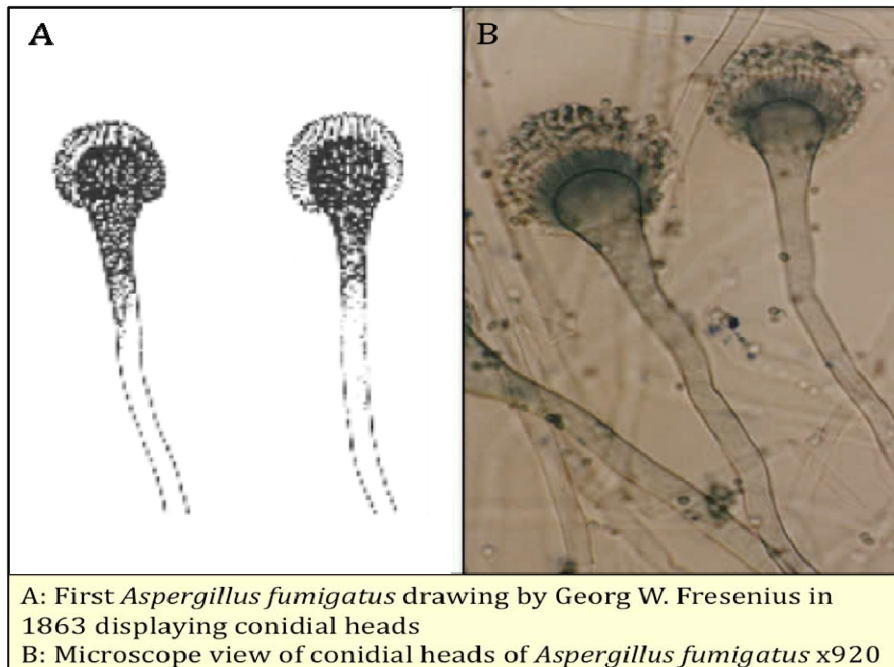
Barnes E. A short history of invasive aspergillosis, 1920 to 1965. The Aspergillus Website. (<http://www.aspergillus.org.uk>).

Bennett JH. On the parasitic vegetable structures found growing in living animals. Transactions of the Royal Society of Edinburgh 1842;15:277-294.

Brakhage AA, Schmidt AJB. Georg W. Fresenius and the Description of the Species *Aspergillus fumigatus*. Contributions to Microbiology 1999;2:I-4.

Plaignaud, M. Observation concerning a fungus in the maxillary sinus. Journal de Chirurgie 1791;87:244-251.

Picture



Brakhage AA, Schmidt AJB. Georg W. Fresenius and the Description of the Species *Aspergillus fumigatus*. Contributions to Microbiology 1999;2:I-4.

Flannigan B, et al. Microorganisms in home and indoor work environments. Aspergillus Image Bank (<http://www.aspergillus.org.uk>).