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HISTORICAL NOTE

A note on the use of botulinum toxin

Alan Scott, at the Smith-Kettlewell Eye Research Institute, San Francisco, pioneered the therapeutic use of botulinum toxin in focal hypercontraction of skeletal muscles.[1] The toxin also inhibits the release of acetylcholine at motor nerve terminals and at cholinergic parasympathetic and sympathetic terminals producing autonomic symptoms. This autonomic effect has been used successfully in the treatment of hyperhidrosis[2] and in smooth muscle hypercontraction of achalasia.[3]

Christian Andreas Justinus Kerner (1786–1862) was a German physician and poet. He published the earliest account of foodborne botulism in 1817[4] and later published two monographs.[5 6] He followed the clinical course of his patients. More importantly, he extracted the toxin and showed its effect on various animals. Kerner correctly concluded that it paralysed both skeletal and parasympathetic function, proposing its use as a therapeutic agent in neurological disorders characterised by involuntary movements such as chorea.

He thought that the toxin present in sausages was a "fatty acid" responsible for the signs of botulism. In his second monograph[6] he described 155 cases of botulism and in detail described their autonomic symptoms: "The tear fluid disappears, the gullet becomes a dead and motionless tube; in all mucous cavities of the human machine the secretions of the normal mucus stands still, from the largest, the stomach, to the tear duct and the excretory ducts of the lingual glands. No saliva is secreted. No drop of wetness is felt in the mouth..."

Chapter 8, entitled "About the fatty acid as a possible therapeutic drug", suggests the use of the toxin not only in muscular hypercontractions ("in such doses that its action could be restricted to the sphere of the sympathetic nervous system only") but also in hyperhidrosis and hypersalivation.[7] Its current use in detrusor dysfunction, dysphonia and speech disorders, as well as dystonias and dyssynergia of skeletal muscles, justifies Kerner's conclusions. He had conceded that what he had said about the "fatty acid" as a therapeutic agent "belongs to the realm of hypothesis and may be confirmed or disproved by observations in the future".

Kerner wrote a letter to the King pleading for funds to allow him to continue his research. Unfortunately, it seems to have been refused. He quickly abandoned his research and turned toward medical practice and romantic poetry. He was closely associated with Robert and Clara Schumann. He wrote the text of *Der tote Muller*, set by Henri Vieuxtemps as Die Sterne Tale stehn.

Ermengem was to discover the organism *Clostridium botulinus* in cases of food poisoning in ham in 1897.[8]

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