Anthrax in Switzerland during the early 19th century

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Summary: The progress of a devastating case of enzootic anthrax is investigated by means of documents found in the archives of a private farm. These reports initiated a detailed historical study of the anthrax situation in Switzerland at the time, notably in the north-west of the country.

KEYWORDS: Anthrax - Carcass burial - Climate - Dormancy - Fertilisers - Seton application - Superstition - Switzerland.

INTRODUCTION

The remote estate of Schwenge (the German word means 'cleared woodland') is situated approximately 800 m above sea level in the Jura highlands, some 30 km south-west of Basle. With an acreage of 77 hectares, Schwenge is among the larger cattle farms of the district. First mentioned in 1622, the farm has been owned since 1736 by the same Basle family and is continuously leased to local farmers.

The Schwenge Archives contain a number of notes and letters (SA 1-12) dating from the period 1818-1820, which disclose the presence of an anthrax enzootic among the livestock. Most of the letters are addressed to the owner, Hans Rudolf Stähelin (1750-1832), a senator and one of the three financial officers (Dreyerherr) in the Basle government. They are written by the tenant in his clumsy style, by the local governor and, interestingly, by the local country parson; governments often relied on the authority of local ecclesiastics to have their regulations enforced (10). These documents stimulated the present study, in which the role of anthrax during the early 19th century in Switzerland, notably in the north-western part of the country, is investigated by consulting documents and literature of the period from this region.

Sources are not quoted verbatim, both for reasons of space and because the fascination and authenticity of the original wording are lost in translation.

DIAGNOSTIC ASPECTS

On the mountain pasture of Schwenge, the first cow succumbed to this enzootic on 23 July 1818. The knacker cutting open the carcass and the local supervising veterinarian expected to see a case of pleuropneumonia, but immediately diagnosed

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Schwarzes Weh (lit. 'black ill'), a term commonly reserved for blackleg (23). However, leaving aside the diagnostic abilities of the contemporary experts (as well as our own difficulties in interpreting their descriptions), the ensuing events at Schwenge do not point to a disease limited to the bovine species, such as pleuropneumonia or rinderpest, despite the fact that these infections were prevalent at the time and were a serious threat to livestock (36). Anthrax, which threatens all warm-blooded animals, also caused great disruption. This may have prompted the newly-founded Society of Swiss Veterinarians (1813) to choose rinderpest and anthrax as the first and foremost of its competition subjects (25). The anthrax prize was won by Dr Cosandey, a medical practitioner in Bulle (12, 25).

ANTHRAX IN SWITZERLAND

Anthrax had long been a common plague throughout the world, but in modern times it assumed the characteristics of a civilisation disease (24). In central Europe, anthrax occurrence reached a climax in the years 1807 and 1811 (17, 31, 34). However, cases reported from western Switzerland in 1811 may have been due to foot and mouth disease (17). The controversy resulting from these reports possibly stimulated the comprehensive dissertation of Nicolas Marmier (21). Later, in 1820 and 1825, anthrax was observed in the canton of Fribourg (7, 11), in 1821 in St Gallen (35), and in 1822 in the cantons of Zurich (15), Lucerne and Zug (22, 28). Further outbreaks were reported from the Emmental in 1834 (8) and from Bern and Fribourg in 1839 (27).

According to J.J. Rychner (26), anthrax is an infection prevalent in mountainous areas, notably in neutral or alkaline, calcareous soils (14) such as those found in the Jura chain. The fact that anthrax was common here is illustrated by a decree which the Basle government promulgated in 1807 (10) and by a later outbreak in 1831 on the Dietisberg estate, not far from Schwenge (30).

THERAPEUTIC MEASURES

'Clean and airy stables which are to be fumigated with vinegar and juniper berries' were recommended as prophylactics in one learned document (SA 2). Further therapeutic and prophylactic measures included providing clean fresh water frequently to the animals, driving them into cool, shadowy places and notably bathing them in cold water. However, the writer of one document was shocked by 'the enormously expensive potions prescribed by the veterinarians which after all do no good' and which tended to increase the losses to the owners (SA 3).

A handwritten book on horse medicine from the 17th century (3) – very probably from the Basle region – contains, among many others, a prescription against anthrax ('gäle [yellow] Hünsche'; cf. also Hünschkraut, i.e. Solanum dulcamara). The remedy consists of numerous ingredients such as saltpetre, saffron, alum, egg white and (last but not least) the urine of a young boy. Then, in addition to several kinds of oil (turpentine, walnut and juniper), this book especially stresses 'oil from the hanging lamp in a Catholic church'. Even more profuse are an electuary and a potion containing, respectively, 13 and 18 different herbal ingredients recommended in an undated pamphlet (4).
A very popular measure in acute cases of anthrax and all other sorts of illness was the so-called Wurzenstecken, a special variant of seton application (or 'pegging'). The dried root of the hellebore plant (*Helleborus niger*, *H. viridis* or *H. pupurascens* [13]), when subcutaneously inserted and fixed, not only acted as a foreign body and thus produced pus, but was also expected to have specific pharmacological effects. The use of this root against anthrax was recommended by a number of authorities, e.g. in a book on horse medicine published in 1547 (or perhaps even earlier) by one of the many Basle printers (2), as well as in the veterinary manuscript of Johannes Louppius of 1612 (the location of the original text is unknown; a photocopy and transcription are in the possession of the author). Root pegging has been an important element of folk medicine (9) throughout the centuries, and even survived into serious textbooks of the recent past (16).

**CONTAGIOUSNESS AND SPREAD OF ANTHRAX**

Anthrax was recognised as a contagious disease long before the bacteriological era, as demonstrated by the recurrent advice that diseased animals should be separated from healthy animals (1, 31, 32, 34). Experimental transfer of blood from an animal infected with anthrax in order to infect healthy animals (Barthélémy in 1823 [33] and Eilbert in 1826 [18]) was performed at the same time as transfer by feeding was being proved effective at Schwenge (see below).

However, in the opinion of the scientists of the time, the putative infectious agent was not considered to be the sole and specific cause of the disease. Decisive causes were said to be heat, drought, scarcity of water, swampy pastures, sudden change of weather, excessive drinking and chills. Only after the illness had manifested itself spontaneously did a contagious agent or poison develop in the diseased body. This agent was then excreted with resultant infection of other animals in the herd (1, 26, 31).

In view of the sporadic character of the outbreaks, and the slow progress and continuous limitation of the enzootic to a well-known dangerous area, prevention of animal trade and human contact was deemed to be unnecessary (1, 32). At least, quarantine measures were rather less strict than those for rinderpest, pleuropneumonia or foot and mouth disease (34). Only Tscheulin (31) recommended that stables be locked and consumption of milk, etc. from diseased animals be forbidden 'even if anthrax, as in most cases, should prove not [sic!] to be contagious'.

**ANTHRAX IN HORSES**

The farmer at Schwenge was extremely disturbed when, on 26 October 1819, he again observed anthrax in animals on the farm; this time, the disease affected his three horses. For these patients, apparently greater expense and better medical care were justified. After the refusal of the local veterinarian to assume responsibility for treatment, the farmer did not hesitate to walk the pitiable creatures some thirty kilometres to present them to a famous hangman and horse doctor of greater reputation. The twenty-year-old gelding, however, perished on the way; nor could a mare and a foal be helped at the end of their demanding pilgrimage.
SUPERSTITION AS A LAST RESORT

Helpless as he was, the Schwenge farmer was persuaded to buy a black billy-goat, but instead of expelling the evil, the animal itself succumbed to the disease in no time (SA 1, 6). Despite being the subject of a protestant owner and government, the desperate farmer ultimately considered consulting the Capuchin monks in the neighbourhood. However, the local governor strictly forbade him 'to invite any Catholic priest to the mountain pastures and to have any sort of exorcism carried out' (SA 6).

INFECTIOUS RESERVOIRS AND THEIR ELIMINATION

Long before the bacteriological era, it was common practice to burn or at least to bury anthrax carcasses to prevent persistence of the disease. The production of leather and meat from diseased animals was prohibited to protect consumers, butchers and tanners. If the carcasses had been skinned prior to burial, the skin had to be cut into pieces and then buried, to prevent misuse of the skin and the violation of regulations (6, 32, 34).

The burial was to be executed properly in a grave of a certain depth, e.g. eight feet (2-2.5 m) (10). Moreover, the ground on which the animal had lain was to be excavated and buried together with the carcass (6).

The depth of the pit was not the sole decisive factor. Soil humidity and underground water-courses were also to be taken into account, otherwise the infectious agent – now known to be spores – might be transported to the surface even from considerable depth, particularly on steeply sloping ground (5). This may have been the case when two cows which perished on the Schwenge pastures in 1818 were inadequately buried, thus giving rise to a further series of deaths. Hence, it was decided to exhume the two carcasses and transfer them to a safer place, ‘a detestable job’ as reported by the parson (SA 10, 12) and – in more flowery language – by the farmer (SA 11). The first burial place was not in an actual pasture area, but hay from this area proved to be infectious when fed to horses (SA 8, 10, 12). Similar cases of anthrax in horses which had been fed in the stables of a city tavern in Basle were reported by J.R. Steinmüller (29). Feeding tests established that the incriminatory hay was indeed infectious, both in Basle (29) and at Schwenge.

Finally, in the summer of 1820, one last expert was consulted, in the person of Johann Anton Ithen of Stein (b. 1790 in Aegeri, near Zug; d. 1843 in Aarau). Ithen was a highly prominent figure, being among the founders (and for some time vice-president) of the Society of Swiss Veterinarians, and one of the most experienced specialists of his time, repeatedly discussing anthrax outbreaks in the literature (19). For years, Ithen made observations in the neighbourhood of his district practice in north-western Switzerland (Schupfart, a village on the northern border of the Jura mountains, some 25 km north-west of Schwenge), where farmers had discovered rich deposits of gypsum (calcium sulphate) which they scattered extensively in order to transform deserted sites into fertile pastures. The extensive spread of this mineral, which obviously contained anthrax spores, must have been the cause of recurrent outbreaks of anthrax in the fertilised area over a period of more than fifty years (20). This is one of the earliest and most instructive reports of the long-term dormancy of anthrax in the soil and the maintenance of an enzootic when spores rise to the surface under unfavourable conditions.
On 20 September 1820, another cow succumbed and Ithen was consulted again. Following an autopsy, 'he was rather stupefied and could not help incriminating some grass as the intoxicant'. This is the end of the Schwenge episode of anthrax and 'thank God, throughout the summer of 1821 all livestock remained healthy' (SA 1).

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LA FIÈVRE CHARBONNEUSE EN SUISSE AU DÉBUT DU XIXᵉ SIÈCLE. – W. Sackmann.

Résumé : L’auteur analyse l’évolution d’une enzootie dévastatrice de fièvre charbonneuse à partir des documents retrouvés dans les archives d’un élevage privé. Les faits ainsi rapportés sont à l’origine d’une étude détaillée et historique sur la situation de la fièvre charbonneuse en Suisse à cette époque, notamment dans le nord-ouest du pays.


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EL CARBUNCO BACTERIDIANO EN SUIZA A COMIENZOS DEL SIGLO XIX. – W. Sackmann.

Resumen: El autor analiza el caso de una enzootia devastadora de carbunco bacteridiano en Suiza a principios del siglo XIX, según documentos que se encontraron en archivos de una granja privada. A partir de esto, realiza un estudio histórico de detalle de la enfermedad en esa época, en particular en la región noroeste del país.

REFERENCES


