

Anthrax

One hundred years of anthrax

A Nicoll, R Maynard

From wool-sorters' to mail-sorters' disease

In this issue of *OEM*, an article by Tim Carter documents the experience of cutaneous, pulmonary, and abdominal anthrax among wool sorters and others in a rural town (Kidderminster, Worcestershire) in the UK in the early twentieth century.¹ At the start of the twenty first century anthrax was an esoteric topic of study, mostly for those interested in zoonoses. This position changed radically following the deliberate anthrax releases in the USA in the autumn of 2001.² Medline searches for articles on human health relating to anthrax revealed only 57 articles published in 2000, but 414 for 2002 (accessed 28/04/03). The American experience has been extensively documented.²⁻⁹ In summary, in September and October 2001 salvoes of sealed envelopes of very fine (weaponised) anthrax powder were posted in sealed envelopes from a New Jersey (USA) postal address to newspaper and broadcast media offices and two senators in the Eastern USA. At least 22 cases of anthrax resulted; 11 cutaneous and 11 pulmonary cases, with five deaths among the latter. The majority of victims were not those to whom the envelopes were addressed but US postal service mail sorters. Though the envelopes were sealed the exquisitely fine powder leaked from the envelopes en route when passing through mechanical sorting machines.³⁻⁴ There were also at least two "ectopic" fatal pulmonary cases in persons where it seems the exposure was indirect, probably through a powder containing letter contaminating others within the postal system.⁵⁻⁶ The impact of these attacks is hard to overstate. The US postal service almost stopped. Decontamination of buildings has been difficult as there is no consensus on the minimum safe level of contamination with anthrax spores (some of the affected buildings remain sealed off). No other anthrax was released but there followed worldwide epidemics of hoax postings of white powders and false alarms as fine powders discovered in the mail and public places has to be assessed for the risk of being weaponised anthrax.¹⁰

The events described a century ago give lessons for the present day. Though

most of the victims in Kidderminster in the early 1900s were occupationally exposed, there were at least two cases among their wives, suggesting that it is possible for anthrax to be brought home from the workplace and cause disease.¹ It was considered useful to produce guidance in poster form telling professionals and workers what cutaneous anthrax looked like and what to do when it was found: a technique rediscovered by the Centers for Disease Control and Prevention in 2001 after September 11th through the US Health Alerting Network and CDC's Health Alert System.¹¹

Anthrax is uncommon in the UK. The last occupationally acquired case was reported in November 2001 in a 55 year old man who handled animal hides, and between 1981 and 2000 there were only 14 cases reported in the UK, all cutaneous.¹² However, it is quite possible that a few other cutaneous cases could be being misdiagnosed and so missed. Raised awareness during and immediately after the American anthrax releases brought forward some patients with anthrax-like skin lesions. It seems less likely that pulmonary cases would be missed with the characteristic widened mediastinum and severe course.

It will be difficult to deal with the deliberate dissemination of lethal biological materials such as anthrax spores in any country.¹³ Options available to terrorist groups are wide and include, in addition to biological substances, chemicals and radioactive materials. The Tokyo subway incident in 1995 showed that a well organised group could produce a very toxic compound, sarin, in significant quantities and then release it in a crowded space to lethal effect.¹⁴ Complete defence against such outrages is impossible, though the UK is probably better prepared than any other European country. For the health sector, UK authoritative information, including tips for clinicians and pictures, are provided on one website.¹⁵ Supplies of antidotes equipment and vaccines are available in all parts of the country,¹⁶ and vaccination of key staff against smallpox is underway.¹⁷ However, there is an immense task for training and

awareness so that any attack is detected early. Occupational physicians are likely to be as well informed as any about potential hazards as similar problems arise from time to time in the occupational setting. Dr Carter's paper is both timely and disturbing.

Occup Environ Med 2004;**61**:95

Authors' affiliations

A Nicoll, Communicable Disease Surveillance Centre, London, UK

R Maynard, Department of Health, London, UK

Correspondence to: Dr A Nicoll, Communicable Disease Surveillance Centre, Health Protection Agency, 61 Colindale Avenue, London NW9 5EQ, UK; anicoll@phls.org.uk

REFERENCES

- 1 Carter T. The dissemination of anthrax from imported wool: Kidderminster, 1900-14. *Occup Environ Med* 2004;**61**:103-7.
- 2 Jernigan JA, Stephens DS, Ashford DA, et al. Bioterrorism-related inhalational anthrax. *Emerg Infect Dis* 2001;**7**:933-44.
- 3 Borio L, Frank D, Mani V, et al. Death due to bioterrorism-related inhalational anthrax. Report on 2 patients. *JAMA* 2001;**286**:2554-9.
- 4 Mayer TA, Bersoff-Matcha S, Murphy C, et al. Clinical presentation of inhalational anthrax following bioterrorism exposure. *JAMA* 2001;**286**:2549-53.
- 5 Barakat LA, Quentzel HL, Jernigan JA, et al. Fatal inhalational anthrax in a 94-year old Connecticut woman. *JAMA* 2002;**287**:863-868.5.
- 6 Mina B, Dym JP, Kuepper F, et al. Fatal inhalational anthrax with unknown source of exposure in a 61-year old woman in New York City. *JAMA* 2002;**287**:858-62.
- 7 Freedman A, Afonja O, Chang MW, et al. Cutaneous anthrax associated with microangiopathic haemolytic anemia and coagulopathy in a 7-month old infant. *JAMA* 2002;**287**:869-74.
- 8 CDC. Update: investigation of anthrax associated with intentional exposure and interim public health guidelines, October 2001. *Morb Mortal Wkly Rep MMWR* 2001;**50**:889-93.
- 9 Inglesby TV, O'Toole T, Henderson DA, et al. Anthrax as a biological weapon 2002. Updated recommendations for management. *JAMA* 2002;**287**:2236-52.
- 10 Harling R, Twisselmann, Asgari-Jirhandeh N, et al. Deliberate release of biological agents: initial lessons for Europe from events in the United States. *Eurosurveillance* 2001;**6**:166-71.
- 11 US Centers for Disease Control and Prevention, Health Alert Network. <http://www.phppo.cdc.gov/han/>.
- 12 PHLS. Occupationally acquired anthrax. CDR, 15 November 2001. <http://www.phls.org.uk/publications/cdr/PDFfiles/2001/cdr4601.pdf>.
- 13 Pile JC, Malone JD, Eitzen EDM, et al. Anthrax as a potential biological warfare agent. *Arch Intern Med* 1998;**158**:429-34.
- 14 Olson KB. Aum Shinrikyo: once and future threat? *Emerging Infect Dis* 1999;**5**:213-16.
- 15 Public Health Laboratory Service. http://www.phls.co.uk/topics_az/deliberate_release/AnthraxClinicalImages.htm.
- 16 Department of Health Emergency Planning Coordination Unit. <http://www.doh.gov.uk/epcu/>.
- 17 Department of Health. Interim guidelines for smallpox response and management in the post-eradication era, December 2002. <http://www.doh.gov.uk/epcu/cbr/biol/smallpoxplan.htm>.



One hundred years of anthrax

A Nicoll and R Maynard

Occup Environ Med 2004 61: 95

doi: 10.1136/oem.2002.006353

Updated information and services can be found at:

<http://oem.bmj.com/content/61/2/95.full.html>

These include:

References

This article cites 10 articles, 8 of which can be accessed free at:

<http://oem.bmj.com/content/61/2/95.full.html#ref-list-1>

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:

<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:

<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:

<http://group.bmj.com/subscribe/>