

Lesson of the Week

Gentamicin-resistant *Pseudomonas aeruginosa* infection from mattresses in a burns unit

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An increase in the number of isolations of gentamicin-resistant *Pseudomonas aeruginosa* from burns was detected in June 1979, despite the restricted use of gentamicin and improved isolation procedures. Patients with burns over 15% of their body acquired a resistant strain six to 11 days after admission. These patients were admitted to a single isolation cubicle—the “shock” room—and at first no source of the organism could be found. The room and its contents were cleaned with a phenolic disinfectant after each patient was discharged. Detailed bacteriological studies were made of the patients, the staff, and the environment to identify the source of infection and mode of transfer.

Investigation

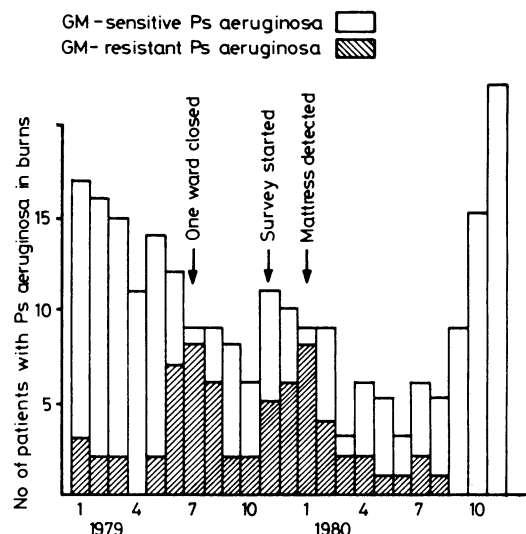
Swabs were taken from the rectum, mouth, and burns of all patients on admission and at regular intervals. The nurses' fingers and uniforms and the patients' bed linen, dressings, and mattresses were sampled with contact plates. Equipment, medication, food, and moist areas such as sinks were also sampled. Gentamicin-resistant strains were isolated from moist swabs taken from colonised patients and their environment, but rarely from elsewhere. The 113 rectal swabs taken from patients on admission showed no *Ps aeruginosa*, and none were isolated from 136 samples from nurses' hands or from 56 samples from uniforms. Only 4 of 100 samples from 15 sinks in rooms not occupied by infected patients showed resistant strains, whereas 51 gentamicin-sensitive strains were isolated. No resistant strains were isolated from other environmental samples apart from mattresses. All resistant strains were serological type O:11.

The covers of eight mattresses were badly stained in the middle due to silver nitrate preparations used topically on the burns. This stained area had become very brittle and exudate penetrated through to the foam underneath. Gentamicin-resistant *Ps aeruginosa* were isolated from three of the mattresses that were used by patients who were infected six to 11 days after admission. Resistant strains survived for more than two months in mattress foam that was stored in the laboratory.

Damaged mattress covers increase the risk of infection

Discussion

Environmental sources of *Ps aeruginosa* infection are usually “moist” items that come into close contact with a susceptible site on the patient—for example, topical solutions, respiratory equipment, cystoscopes, and equipment for feeding babies. Sites not in close contact with a susceptible site—for example, sinks—are not an important source.^{1 2} Infection of the urinary



The increase in the proportion of gentamicin-resistant strains of *Ps aeruginosa* and the subsequent decline after the discovery of mattresses as a source of infection.

tract with *Ps aeruginosa* arising from a contaminated antistatic mattress has been described.³ *Ps aeruginosa* has also been found in the mattress of long-stay orthopaedic patients,⁴ and other Gram-negative bacilli have been found in mattresses (M Bradley, personal communication). In this study no other source of infection except the mattress was found. Failure to find *Pseudomonas* previously in mattresses was due to its absence on the dry surface of the mattress cover, though it survived in the foam under the cover. Presumably exudate from the burn penetrated the dressings and the damaged mattress cover. The organisms

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would then pass from the mattress to the next uninfected patient through the moist dressing to the burn surface.

The water-proof nylon-coated mattress cover was mainly damaged by the silver nitrate solution, but previous unpublished studies have shown that phenolic disinfectants also reduce the water-proofing of the cover. Topical chemoprophylaxis with various preparations of silver nitrate has been important in reducing *Ps aeruginosa* colonisation and infection in patients with burns.⁵ It is therefore desirable to continue this type of treatment in the burns unit. It is necessary to observe the condition of mattress covers and withdraw from use damaged ones that have lost their water-proofing. It is also advisable to restrict the use of phenolic disinfectants and to use only detergents to clean the covers when possible.

Gentamicin-resistant strains of *Ps aeruginosa* are a particular hazard in the burns unit because the range of possible treatments

becomes considerably restricted. After the damaged mattresses were removed and the use of gentamicin was restricted there were no further outbreaks with resistant pseudomonas in the unit (figure).

References

- ¹ Lowbury EJJ, Thom BT, Lilly HA, Babb JR, Whittall K. Sources of infection with *Pseudomonas aeruginosa* in patients with tracheostomy. *J Med Microbiol* 1970;3:39-56.
- ² Ayliffe GAJ, Babb JR, Collins BJ, Lowbury EJJ, Newsom SWB. *Pseudomonas aeruginosa* in hospital sinks. *Lancet* 1974;ii:578-81.
- ³ Robertson MH, Hoy G, Peterkin IM. Anti-static mattress as a reservoir of pseudomonas infection. *Br Med J* 1980;280:831-2.
- ⁴ Stead S. Letter in Contact No 18. *Nursing Times* 1979 Sep 6.
- ⁵ Lowbury EJJ, Jackson DM, Lilly HA, et al. Alternative forms of local treatment for burns. *Lancet* 1971;ii:1105-11.

Reading for Pleasure

The snail, the thief, and the dipper

BRENDAN JACOBS

To be a slow reader is to suffer a most aggravating disability. It is agonising to think of those piles of books on shelves, tables, and chairs still waiting to be read, and yet there is a pleasure in all this. It must be something akin to that felt by J L Garvin, who, when asked if he had read all the books open and unopen in his study, replied: "No, but they're radioactive dear boy, radioactive." I quote (or steal) from an article on the buying of books written some years ago by Paul Jennings. To quote a quote is possibly not quite done, somewhere between borrowing and stealing.

In *The Winter's Tale* (IV, ii) Autolycus is described as a rogue: he was "littered under Mercury"; he carried on his rogue's business as a rascally pedlar, "a snapper up of unconsidered trifles." Mercury was not only god of science and commerce, but he was also patron of travellers, rogues, vagabonds, and thieves. That is a quotation from *Brewer's Dictionary of Phrase and Fable*, my favourite dipping book and a joy for the easily distracted reader. It is odd and a little unsettling to think of Mercury as one who looked after the interests of such a motley bunch. He must have had a twinkle in his eye. Did not Cocteau in *Amphitryon 38* have him "floating gently down to earth from Olympus holding aloft his umbrella as parachute"? For a brief biography of Amphitryon see Lemprière's *Classical Dictionary*, another essential for the unrepentant dipper.

Not having total recall, much is forgotten. The "forgettery" is another disability, so a random and idiosyncratic "common place book" has its personal advantages. Before looking again at *The Winter's Tale* and *Brewer* I thought that my collection of snippets taken from umpteen sources consisted chiefly of "unconsidered trifles," and was perhaps a mere self-indulgence. Not a bit of it. I now confess to being a rogue, a minor pilferer,

a collector of other people's work, even though my sources are written down in the common place book. Paul Jennings himself took Garvin's remark from Douglas Woodruff, ex-editor of the *Tablet*, so my quote is thrice removed from the original.

D McCracken's "Known by your bookshelves" in these columns on 3 January appeals to me. The reader's interests are in situ for all to see and there should be no need for the furtive look. In Thea Thompson's *Edwardian Childhoods*, published this year, Annie Wilson of Nottingham, who is one of those whose memories are recorded, said: "I read a lot of books on the sly, I did. . . . Books had to be hidden because you see reading was a vice. 'You've got something better to do than put your nose in a book.' That was the expression you see." The only visible book in her parents' house was the Bible, and one paper—"Home Companion or something, or *Sunday Circle*." Among some bookless homes that I visit, one fooled me completely. The owner is an Irish bus conductor with wide literary tastes; he keeps the whole of his large collection of historical books in packing cases. He told me that his wife "could not bear the things cluttering up the place."

Unconventional writings

Among the oddities on my shelves is an early booklet of Robert Graves with the ear-tickling title of *Lars Porsena or The Future of Swearing and Improper Language* published in 1927. The matter in this book is good for a chuckle in these times and well worth reading as an example of early Gravesiana. "There has been a noticeable decline of swearing and foul language in England, and this except at centres of industrial depression, shows every sign of continuing until a new shock to our national nervous system, a European war on a huge scale or widespread revolutionary disturbances at home may (or may not) revive the habit of swearing simultaneously with praying." He went on to elaborate on the nature and necessity for such language. A