When I use a word . . . . Counterfactual medical history: the death of Charles II

A counterfactual statement, originally a philosophical concept, expresses an assessment of what might have happened if certain unfulfilled conditions had actually occurred. The life of King Charles II offers more than one opportunity for counterfactual speculation. The King fell ill on Monday 2 February 1685 and died on the following Friday. Of the many speculated causes of his death, the most parsimonious is that gout led to renal insufficiency, and the consequent uraemia caused convulsions, a major feature of his illness. Iatrogenic dehydration, secondary to bleeding and cupping, scarifying, blistering and clystering, and the administration of purgative and emetic medicines, would have caused acute renal insufficiency and further deterioration. Counterfactually, if modern treatments had been available, the King’s illness could have been prevented or delayed and his life could have been prolonged. Because his wife Queen Catherine failed to give him an heir, his brother, the Duke of York assumed the throne as James II in 1685, but was deposed in the Glorious Revolution of 1688–9 by William III. Had modern medicine been available and an heir emerged, the House of Orange might never have become established in Britain.

Jeffrey K Aronson

Harms in healthcare

In September 2017, during one of Oxford University’s annual alumni weekends, two colleagues and I, members of the University’s Centre for Evidence Based Medicine, presented a symposium in which we discussed the ill health of three English monarchs, Henry VIII, Elizabeth I, and Charles II. Medical historian Tilli Tansey expertly chaired the meeting.

A year later we turned our symposium into an exhibition, hosted by the Bodleian Library, in which we extended our scope by adding Mary II, George III, and George VI. The combined attractions of medicine and monarchy ensured the success of the exhibition, which we called “Unhealthy Times of Kings and Queens.”

Our presentations gave us the chance to indulge in some counterfactual speculation, asking how history might have been changed had modern medical techniques been available to those monarchs. For example, in 1694 Mary II, the niece of Charles II and wife of William III, died from smallpox; variolation, introduced into England by Lady Mary Wortley Montagu in 1718, or vaccination, described by Edward Jenner in 1798, would have helped. George VI, a heavy smoker, died of lung cancer in 1952, just before the causative link was first reported; one supposes that had he known of the risk he might have been persuaded to stop smoking in good time.

The life and death of King Charles II

The life of Charles II offers more than one opportunity for counterfactual speculation.

Charles came to the throne with the restoration of the monarchy in 1660, and in 1662 married a Portuguese Princess, Catherine of Braganza. Catherine proved unable to bear children. Early in their marriage there were rumours that she was infertile, the King having sired 11 illegitimate children on mistresses such as Louise Renée de Penancoët de Kéroualle (or Kérouaille), Lucy Walter, and Mary (Moll) Davis. Although Catherine reportedly had a miscarriage in 1668, the King, who was abroad at the time, did not believe it. Although he later declared that a subsequent miscarriage was proof of her ability to conceive, nevertheless she did not give him an heir. When Charles died in 1685 his brother, the Duke of York, acceded to the throne as James II. However, James’s religious convictions led to his being deposed by William III in the Glorious Revolution of 1688–9. Had Catherine been offered modern treatment with, say, dydrogesterone, Charles could have had an heir to the throne and the House of Orange might never have become established in Britain.

Modern medicine could also have helped Charles himself both during his life and at the end of it. The King was accustomed to walking his spaniels in the London park whose establishment he had funded, St James’s Park. But on Sunday 1 February 1685 he stayed at home, nursing an ulcer on his leg. The following morning a groom of the bedchamber reported that when the King arose he was “pale as ashes and ghastly”; he then became speechless and fell back with a cry, “the dreadfulest shriek,” and started to have convulsions.

His many physicians were summoned. They bled him 16 oz, cupped and scarified him, and gave him an antimonials emetic and a cathartic. Later that morning they gave him more emetics, clysters (enemas), and purgatives, and cupped him again. In the afternoon they gave him sacred bitter powder, compound peony water, bryony compound, and white hellebore. The next morning he had another convulsion and was reported that when the King arose he was “pale as ashes and ghastly”; he then became speechless and fell back with a cry, “the dreadfulest shriek,” and started to have convulsions.

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a julep, a sugary drink, of black cherry water, flowers of lime, lily of the valley, peonies, lavender, and prepared pearls.

On Wednesday 4 February Charles’s physicians did not bother him until late in the evening, when they administered white tartar, white wine, senna, manna, chamomile, gentian, nutmeg, and spirit of human skull.

On Thursday 5 February news came of an “intermittent fever in town,” prompting them to give him Peruvian bark 4-hourly. They repeated some of the other treatments, to which they added Raleigh’s stronger antidote (“that most active cordial”), Goa stone, and bezoar stone.

On the morning of Friday 6 February the King told his physicians that “I have suffered very much, and more than any of you can imagine. My business will shortly be done.” He became acutely breathless, his speech failed, he lost consciousness, and he died just before noon.

The many manoeuvres that Charles’s physicians performed, such as bleeding and cupping, blistering and oysterling, and the administration of purgative and emetic medicines, were intended to restore the balance of the bodily humours, supposed by Galenic theory to be out of balance during illnesses. Some of the medicines were used to counteract the scalding effect on the urine of cantharides, used as a blistering agent. Spirit of human skull, used to treat convulsions, was, according to Pliny the Younger, water drawn from a spring in the night, and drunk from the skull of a man who had been slain and whose body remained unburnt. Peruvian bark and Goa stone were used to counteract fever, and the former might have been effective, since it contains quinine. However, most of these measures would have been ineffective or even dangerous, depending on the doses used and the frequency with which they were administered. Both white hellebore and lily of the valley, for example, contain cardiac glycosides.

Before he died the King apologized to his doctors for being “an unconscionable time dying.” They might better have apologized to him, having done all they could to dehydrate him, undoubtedly hastening his death. This is not merely a contemporary judgement. In 1699, criticising her doctors over their treatment of Mary II in the Lancashire rising of 1648, an anonymous poem, titled “A Tryal of Skill of Three Great Artists” proclaimed that three inept physicians, impaired by “Ignorance, Madness, or Wine,” had bled a royal patient to death. A similar criticism could well have been applied to the death of Charles II.

The source of this type of criticism of 17th century medicine arose from a debate between those who adhered to Galenic principles and the followers, Helmontians, of the medical theories of Jean Baptiste van Helmont (1579–1644). The Galenists relied on humoral theory, on which the Pharmacopoeia Londinensis, which Charles’s physicians would have used as their text, was founded. They would probably have used Nicholas Culpeper’s edition of 1653. The Helmontians, on the other hand, regarded Galenism as a pagan theory and, taking their lead from Paracelsus (1493–1541), adopted a tripartite system, in which the three agents of treatment were the Trinity, Nature, or Archeus as they called it, and human operation in the person of the physician. To the Galenists disease arose through imbalance of the bodily humours and their treatments were aimed at removing “naughty humours” and restoring the balance. To the Helmontians disease arose through a disordered Archeus, which therapeutic interventions either strengthened or pacified.

What killed the King?

Historical diagnosis is entertaining, albeit difficult and unreliable. In Charles’s case we have the few details of his illness mentioned above and the results of a post-mortem, as reported by his physician Sir Charles Scarburgh:

- on the surface of the brain the veins and arteries were unduly full; none was ruptured;
- the cerebral ventricles were filled with a kind of serous matter;
- the substance of the brain itself was quite soaked with similar fluid;
- on the right side the lungs and pleura were firmly adherent to the chest-wall;
- the heart was large and firm and quite free from malformation;
- the lungs were charged with blood;
- the liver was livid in colour, engorged with blood, as were the kidneys and spleen.

Several of these changes were probably terminal, but the engorgement of the blood vessels in the brain and the presence of fluid (cerebral oedema) suggest that he might have had a cerebral infection, such as a viral encephalitis.

Rumours at the time suggested poison, but the King was popular and there is no evidence of that. A suggestion that he died of mercury poisoning is based on dubious supposition and weak evidence.

We can rely on contemporary reports that the King had gout, which could have caused the ulcer on his leg and renal damage. It has also been suggested that he had what later came to be known as Bright’s disease, which we now recognise as a syndrome that can be caused by a range of kidney diseases, such as glomerulonephritis, causing the nephrotic syndrome, with renal impairment, peripheral oedema, proteinuria (coagulable urine as Bright described it), and hyperlipidaemia. High blood pressure as a result of kidney disease could have caused the enlarged heart and possibly a stroke, although a cerebral haemorrhage would surely have been seen at post-mortem examination. Hyperlipidaemia secondary to renal disease could have resulted in a thrombotic stroke, which might have been masked by the cerebral oedema; however, the death mask showed no signs of facial palsy. The dehydration that he assuredly suffered at the hands of his physicians would have caused acute renal insufficiency, which could have caused acute posterior reversible encephalopathy syndrome, explaining his cerebral oedema and convulsions.

Could modern medicine have helped?

Diagnostic speculation invites counterfactual speculation.

Had Charles had access to modern medical interventions, much could have been done to have prolonged his life, and with good quality.

Chronic gout would have been alleviated by medicines that increase uric acid excretion or reduce its production; acute attacks would have been relieved by non-steroidal anti-inflammatory drugs or corticosteroids.

Chronic kidney disease could have been prevented by treatment of gout and hypertension, managed, if severe, with renal replacement therapy, i.e. renal dialysis, and eventually cured by renal transplantation.
Hyperlipidaemia could have been treated with lipid-modifying drugs.

A viral encephalitis could have been treated with antiviral drugs.

**Conclusion**
Whatever killed Charles, his physicians could not have cured or prevented it, even had they known what it was and what caused it. However, they almost certainly hastened his death when it came.

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