Richard III ruled England from 1483–85 AD, and he died at the battle of Bosworth Field near Leicester. He is one of England's most well known medieval kings because of his portrayal as a villain in Shakespeare’s play Richard III, in part a consequence of his usurping the throne and the perception of his spinal deformity. His body was buried in the church of the friars minor (Grey Friars) in Leicester.1 In September, 2012, Richard’s remains were excavated and sediment samples were taken from the sacral area of his pelvis, and control samples from his skull and the soil outside the grave cut (figure). Analysis was done with disaggregation with trisodium phosphate, microsieving with 300, 160, and 20 µm diameter mesh, and then light microscopy.2 The results showed the presence of multiple roundworm eggs (Ascaris lumbricoides) in the sacral sample, where the intestines would have been during life (figure). The eggs were decorticated and dimensions ranged from 55·1–69·8 µm in length to 40·9–48·2 µm in breadth. The control sample from the skull was negative for parasite eggs, and the control sample from outside the grave cut showed only scanty environmental soil contamination with parasite eggs.

These results show that Richard was infected with roundworms in his intestines. Roundworm is spread by the faecal contamination of food by dirty hands, or use of faeces as a crop fertiliser. No other species of intestinal parasite were present in the samples. Past research into human intestinal parasites in Britain has shown several species to have been present prior to the medieval period, including roundworm (Ascaris lumbricoides), whipworm (Trichuris trichiura), beef/pork tapeworm (Taenia saginata/solium), fish tapeworm (Diphyllobothrium latum), and liver fluke (Fasciola hepatica). We would expect nobles of this period to have eaten meats such as beef, pork, and fish regularly, but there was no evidence for the eggs of the beef, pork, or fish tapeworm. This finding might suggest that his food was cooked thoroughly, which would have prevented the transmission of these parasites.

Contributors

PDM designed the study, performed the bulk of the parasite analysis, undertook the literature search, and wrote the article. H-YY performed some of the parasite analysis. JA excavated the skeleton, took the samples for analysis, and commented on the paper. RB led the entire excavation project that recovered the skeleton, and commented on the paper.

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References