Correspondence

Fatal Yersinia enterocolitica transfusion reaction

Although septicemia is a rare complication of blood transfusion, episodes of transfusion associated sepsis may be fatal. A recent review demonstrated that about half of all reported cases resulting from transfused erythrocytes involved Yersinia enterocolitica alone. These transfusion reactions are presumed to result from a chain of coincidences in which a mild infection in the donor gives rise to a transient bacteremia during donation. As Y enterocolitica is one of the few human pathogens that can grow at 4°C, after storage for one to three weeks at 1–6°C a unit of blood could contain numerous bacteria and associated endotoxin.

Human Y enterocolitica infections are particularly frequent in Belgium. Mild diarrhoea is a common manifestation of Y enterocolitica infection and it often goes unrecognized. After the enteritis the organism may persist for some time in mucosal, submucosal or lymphoid tissues, and give rise to episodes of symptomatic or cryptic bacteremia.

We report a case of fatal Y enterocolitica septicaemia in an 82 year old man caused by a contaminated unit of red cells that was collected from an apparently healthy asymptomatic blood donor. The patient had a history of severe cardiovascular disease and chronic renal insufficiency. Three weeks before admission to hospital he developed atrial flutter for which coumarin treatment was started.

On 19 August 1995, the patient was admitted to hospital because of a two day history of anal blood loss, abdominal discomfort, and vomiting. He was haemodynamically stable but blood examination revealed an international normalised ratio (INR) of 10.8 and a haemoglobin of 88 g/l. Colonoscopy revealed a tumour of the ascending colon which was bleeding. The patient was treated with vitamin K. Even after correction of coagulation (INR 1.53), blood loss per anum persisted and haemoglobin further decreased to 73 g/l. One unit of packed cells was given. During the transfusion the patient developed a temperature up to 38.7°C. After transfusion of about 200 g red cell concentrate, the transfusion was stopped and three blood culture sets were taken. Also a sample from the unit of packed red blood cells was inoculated on a separate culture set. Meanwhile the transfusion bag was stored in the refrigerator. The fever was transient, but a few hours later the patient developed shock with hypotension and pallor. Plasma expanders, sympathomimetics, and antibiotics (amoxicillin and gentamicin) were started, but shock and multigang failure were progressive. The following day, after incubation at 36.5°C, there was growth of motile Gram negative rods in the culture set inoculated with the packed red blood cells. These were identified as Y enterocolitica biotype 2. Therefore, antibiotics were switched to fluoroquinolones. The patient died four days after the transfusion because of septicaemic shock.

Identity was confirmed by the Belgian Reference Laboratory for Yersinia (G Wauters, Université Catholique de Louvain, Brussels). In addition, blood from the blood-bag side tube of the transfusion bag was inoculated on an aerobic blood culture bottle and remained sterile. Absence of Y enterocolitica in the low oxygen consuming segment is consistent with a low level of bacterial contamination at the time of collection. The donor of the blood sample was traced. He was a 58 year old healthy man who had spent his holiday in Switzerland the week before the blood donation. He did not recall any gastrointestinal, disturbance, nor did any member of his family. However, he had been very tired after his last blood donation on 31 July 1995, possibly indicating a subclinical infection. A coproculture was performed 50 days after the donation but it was negative for enteropathogens after prolonged enrichment on modified Rappaport medium. Serum taken at the same time demonstrated an antibody titre against Y enterocolitica serotype O:9 of 1:200 suggesting a recent infection as serum taken at the time of donation showed no agglutination.

About 40 cases of transfusion reaction caused by Y enterocolitica have been described in the English language literature with a mortality rate higher than 60%. Y enterocolitica is the organism most commonly implicated in red cell related transfusion sepsis.

The association between Y enterocolitica and transfusion related sepsis can be explained by the fact that this microorganism can grow at refrigerator temperature, and by the stimulation of its growth by exogenous iron (in most reported cases red cell units were more than 25 days old). After several weeks of conservation these units may contain sufficient free haemin to stimulate the multiplication of Y enterocolitica.3 The unit with packed red blood cells transfused in our patient was three weeks old.

A few studies were done regarding the growth and endotoxin production of Y enterocolitica in packed erythrocytes. When such units were inoculated with low levels of Y enterocolitica (0.1-1 colony forming units (cfu/ml)) the organism proliferated to high titres (> 103 cfu/ml) after a lag period of 10-20 days. Endotoxin was detected only after three days of incubation.4

Several solutions have been proposed to prevent this life threatening infection. Questioning the donors about gastrointestinal symptoms does not appear a sensitive predictor of Y enterocolitica infection and bacteremia. Only two thirds of donors implicated in Yersinia transmission recalled gastrointestinal illness before donation.5 Serosel gives numerous cross reactions and false negative results in acute infection.6 A decrease in storage time of packed red blood cells to less than three weeks would have a devastating effect on blood supplies. Also, the addition of antibiotics may cause problems which resolves because of anaflaxisy or other adverse drug reactions. Cycling of all units would be logistically very difficult. Furthermore if culture is done soon after donation, when fewer than 10 colonies per sample volume is present, it will not be detected.

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Alcohol estimation at necropsy: epidemiology, economics and the elderly

Having read this paper with interest, we feel that it raises several important issues pertinent to necropsies performed on behalf of HM coroner or the procurator fiscal, of which the authors appeared to be unaware. This is a common mistake in that, given the apparently rich source of material from coroners’ necropsies, forensic pathologists seem reluctant to undertake any research using this material. In Britain there have been no previous publications concerning blood alcohol levels in a medical necropsy population because there is no provision under present law for such a study.

Postmortem examinations in England and Wales are carried out either by the request of the coroner, using powers as set out in the Coroners Act 1988 or, with the permission of the person lawfully in possession of the body, under the conditions set out in the Human Tissue Act 1961. The coroner, the procurator fiscal’s power to request a postmortem examination is grounded in common law rather than statute. The Human Tissue Act 1961 applies to Scotland as to England and Wales.

Where a coroner has decided to open an inquest, he or she may direct that samples be removed from the body during the course of the postmortem examination for “special examinations” including toxicology. The person carrying out the postmortem examination is required to preserve material that bears upon the cause of death for as long as the coroner thinks fit. In England and Wales, the sole purpose of the postmortem examination is to assist the coroner in inquiries that are essentially limited to who the deceased was and how, when, and where they came to their death. Tissue cannot be removed or preserved for any other purpose under the coroner’s authority. In Scotland, the procurator fiscal’s enquiries are directed towards ascertaining “the truth or otherwise of the information given to him as to the death: to investigate the circumstances impartially and in the public interest without fear or favour and to get to the truth: to ensure that any dangerous or faulty practices are exposed so as to prevent their recurrence: to preserve from corruption the sources of evidence: to ensure that homicide does not go undetected and to make, when required, a true report to the officers of the Crown.” Neither the coroner nor the procurator fiscal
have any authority to authorise the collection or retention of specimens for other purposes, including research. If samples are required for teaching or research, then the requirements of the Human Tissue Act have to be met, whether the necropsy be a normal hospital one or a medicolegal postmortem examination. When the examination is a medicolegal one, then the removal of material for research purposes is not only the concern of the person in lawful possession of the body, who, in the absence of a request by the deceased that his parts of his body be used for purposes of inter alia research, has to establish that the surviving relatives of the deceased have no objection to the removal of material for that purpose, but also that of the coroner or the procurator fiscal. 1

While there is no sanction for failure to comply with the Human Tissue Act set out in the Act itself, a coroner is not so inclined to apply the Act. Some pathologists believe that the retention and analysis of material from medicolegal necropsies is not justified where the coroner refuses to pay for such work. Coroners can only pay for further investigations when they have decided to hold an inquest and they are satisfied that they are pertinent to the cause of death. Pathologists should be aware that retaining material not relevant to the cause of death places them out with current legislation.

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Oil immersion magnification without the oil

Most of us have a 100x oil immersion lens as part of our standard microscope kit. However, many, like me, must be reluctant to use it very often because of the inevitable mess, asymmetry and the inability to judge high and low power without cleaning the slide every time. These days, many demonstration microscopes are fitted with a video camera and monitor, and I have found that this equipment allows the use of the 100x lens without oil. Simply closing the iris diaphragm of the condenser and observing the image on the video screen rather than through the eye pieces results in an acceptable high power view. The use of oil does, of course, improve the quality of the image, but the video screen method without oil provides a high power image of a quality that is adequate for many diagnostic or demonstration purposes. The cost of video cameras and monitors has fallen steadily over recent years, and it could be argued that the purchase of a video system is better value for money than an expensive high power oil free lens, assuming that there is already a 100x oil immersion lens fitted without high power magnification with and without oil, and the added benefit of video.

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This is a brief but comprehensive text. The first four chapters cover general pathology and the remaining 12 deal with systemic disease. This text is confined to the medical two thirds of each chapter giving an impression of rather uneconomical use of space although the broad margins clearly will be very useful for annotation. Where appropriate the margins contain photomicrographs, gross photographs, tables, and diagrams. The photographs are of extremely high quality but some suffer from a rather small size and less than adequate labelling.

A particularly valuable feature is the introductory paragraph at the start of most of the chapters on systemic disease, which gives an overview of the pathological principles peculiar to that system together with a summary of normal structure and function. Each chapter is followed by a helpful and succinct summary box.

There are indexing errors and some text references to a topic treated elsewhere are followed by (P000) instead of the page number. The text is clear and readable. The multitude of demands on undergraduates' time makes one question whether a dental student should be required to have such a wide knowledge of pathology, but as long as those who design the curriculum deem that this is necessary, we will have to be content with this textbook. At £36.95 it is a good value and should be seriously considered by both medical and dental undergraduates as an introduction to pathology.

L W HORTON


This is a very elegantly produced volume that should prove popular in its target market—those seeking to become boarded in reproductive endocrinology in the USA. It thus contains all of the appropriate background material for specialist examination in reproductive physiology and biochemistry. The student is greatly helped by the numerous original diagrams, though it is not immediately obvious why some figures are duplicated at the beginning of each chapter, other than as pure decoration. From a factual point of view the material is relevant and up-to-date, though obviously it is possible to criticise a number of omissions. For example, there is no material on the receptor deficiency syndromes, a very active clinical research topic at the present time. There is also no mention of the use of progesterone containing intrauterine devices for the treatment of dysmenorrhoea or bleeding (perhaps reflecting the US origins of the book), and very limited information on the immunological treatment of recurrent abortion (which is surprising because this is a very widely practised in the US). However, the book can be recommended to a young clinician seeking to become better informed in this particular topic.

T CHARD


In the preface to this book the editors state that the book deals with inborn errors of metabolism is detailed, complex, time consuming, and difficult to comprehend. Their target audience are general physicians whose knowledge of metabolic disease is not large. Although many metabolic disease variants are present in the older age groups adult physicians will occasionally come into contact with these disorders. However, genetic metabolic disease and its diagnosis will remain mainly in the hands of specialists in pediatrics and laboratories. I cannot see changes in health delivery systems affecting this, and lawyers would have a field day if it did. On the other hand successful treatment of many of these disorders will result in an increasing adult population requiring treatment.

A prestigious list of international authors (regrettably few from the UK) has been assembled by the editors. Clearly a lot of thought and a great deal of work has been put into the construction of the chapters and the result is a uniform structure involving numerous, background biochemistry, clinical signs and symptoms, diagnosis, and treatment. This makes it easy to find one's way around initially, however, when one attempts to get into the detail of the book, one becomes very obvious that it is highly condensed and far from simple. For example, many general physicians faced with a metabolic pathway with