

NHS Blood and Transplant

Organ Donation and Transplantation Directorate (ODT)

Incident number INC 423 –Transmission of Donor Infection

Summary of Incident

On 20th November 2013 a [redacted] year old [redacted] was admitted to hospital with confusion and a clinical diagnosis of meningo-encephalitis was made. [redacted] condition deteriorated and [redacted] was diagnosed as brain stem dead and consent for organ donation given on 29th November 2013. Six renal centres declined the kidneys based on history and they were then offered by the Duty Office via the fast track system. All participating renal centres reviewed the donor data using the Electronic Offering System (EOS). Both kidneys were accepted and subsequently transplanted into two recipients at the University Hospital of Wales, Cardiff (UHCW). The liver, heart and lungs were declined on donor medical history (meningitis/encephalitis type presentation) by eight liver and four cardiothoracic centres (full offering details attached in appendix 1). All tissue was declined due to infection. HM Coroner was informed; a post mortem was not required and a death certificate was issued. The cause of death was noted as meningo-encephalitis.

On 11th December 2013 the Team Manager [redacted] – Organ Donation Services Team was notified by UHCW that both recipients had developed an encephalitis type illness. This incident was then reported to NHSBT via the electronic reporting system on the same day. Both recipients have subsequently died.

This incident was reported to the Human Tissue Authority as a Serious Adverse Reaction: CAS-25979-8HRF.

Agencies and Individuals Involved

NHS Blood and Transplant

- Professor James Neuberger – Associate Medical Director, Organ Donation and Transplantation and Honorary Consultant Physician
- [redacted] – National Clinical Lead for Governance, Organ Donation and Transplantation and Professor of Cardiothoracic Surgery
- [redacted] – Assistant Director - Education and Excellence, Organ Donation and Transplantation
- [redacted] – Consultant Virologist, Head of Transfusion Microbiology
- [redacted] – National Clinical Lead for Organ Donation and Consultant in Intensive Care

Public Health England

- [redacted] – Consultant Epidemiologist, Field Epidemiology Services
- [redacted] – Head of Blood Borne Viruses Unit

- [REDACTED] – Communications Manager
- [REDACTED] – Director of the Centre for Infectious Disease Surveillance and Control
- [REDACTED] – Consultant, [REDACTED] Virology Laboratory
- [REDACTED] – Consultant, [REDACTED] Virology Laboratory

Public Health Wales

- [REDACTED] – Consultant Virology and Microbiologist, Specialist Virology Centre, Cardiff
- [REDACTED] – Executive Director of Public Health Services
- [REDACTED] – Consultant in Microbiology and Infectious Diseases, Informing Health Care
- [REDACTED] – Communications Officer
- [REDACTED] – Consultant Epidemiologist

Additional Agencies

- [REDACTED] – Environmental Health Manager, [REDACTED] Council ([REDACTED])
- [REDACTED] – Interim Unit Director, [REDACTED] Health Protection Team ([REDACTED] HPT)
- [REDACTED] - Consultant Parasitologist, Hospital for Tropical Diseases, London
- [REDACTED] - Professor of Viral Pathogenesis, Wellcome Trust Sanger Institute, London

Donor Social and Medical Background Known at the time of Donation

The donor's medical and social history was obtained from the clinical notes, the donor's partner and [REDACTED] GP. The donor was a white Caucasian [REDACTED] who lived in [REDACTED]. [REDACTED] partner lived in a different household and stated that [REDACTED] had not visited the donor's home for years; [REDACTED] was a [REDACTED]. [REDACTED]. The donor had no travel history outside of the UK.

The donor had visited [REDACTED] GP on 19th November 2013, two days prior to admission, for a repeat prescription of [REDACTED] regular medication [REDACTED]. [REDACTED] there were no specific acute illnesses noted. [REDACTED]. [REDACTED]. [REDACTED].

████████████████████ There was no further follow as the donor had not responded to phone calls or letters.

Admission History

Prior to ██████ admission on 20th November 2013, the donor had visited ██████ partner's house; this was not unusual. ██████ partner went out and returned later that afternoon to find the donor tired and listless, later unable to stand up. An ambulance was called by NHS Direct. On arrival at ██████ Emergency Department a few days' history of diarrhoea and fever was reported and ██████ was admitted to a medical ward. During the admission, ██████ fell and sustained a head injury. A CT scan of the head was performed on 22nd November with no abnormality seen. The donor's condition deteriorated that same day and ██████ became unresponsive and was transferred to ITU. Repeat CT showed hydrocephalus. A lumbar puncture, also performed that same day was reported as:

- No bacteria seen
- White Cell Count (WCC) $185 \times 10^9/L$ (Polymorphs 20% 80% lymphocytes)
- Red Blood Count $5 \times 10^{12}/L$
- Glucose 2.5 mmol/L
- Protein 1.5g/L

The clinical impression was of possible viral meningitis/encephalitis. The donor was treated for possible viral meningitis and commenced on acyclovir and cefuroxime. This was subsequently stopped on 28th November 2013, 1 day prior to donation.

On 29th November 2013 the donor was diagnosed as Brain Stem Dead and ██████ death was reported to the HM Coroner. No post mortem was required by the HM Coroner and the body was cremated. The cause of death was recorded as meningo-encephalitis.

Offering of Organs

The kidneys were offered through NHSBT's Duty Office. All centres were contacted via phone and requested to review EOS for details of the offer. The outcomes of the offers are noted below:

- Freeman Hospital, Newcastle – Declined on past history and function
- Western Infirmary, Glasgow – Declined on past history (specifically cause of death and virology)
- Royal Liverpool University Hospital, Liverpool – Declined on past history (specific mention of encephalitis)
- St James Hospital, Leeds – Accepted one kidney
- Queen Elizabeth Hospital, Birmingham – Declined on renal function
- Royal Infirmary of Edinburgh, Edinburgh – Declined on past history
- Northern General Hospital, Sheffield – Declined on past history

One kidney had been accepted by St James, Leeds. The second kidney had not been accepted and, in accordance with protocol, was offered via the fast track system. This fast track offer was sent at 00.32hrs on 30th November 2013. The completed EOS record available at the time of this fast track offer is referenced in appendix 2. The database team at ODT has confirmed that there is no evidence of activity on the donor records on EOS after 23.30hrs 29th November 2013. This confirms that all relevant information was known about the donor by the time of the fast track offer.

The Duty Office then contacted Page One Paging Services and gave the following message:

"We have a kidney fast track offer for you - Donor Number: 105726 - Donor Sex: [REDACTED] - Donor Age: [REDACTED] - Donor Type (DBD/DCD): DBD - Organ/s for consideration: Unspec Kidney - Reason for fast track: Poor function – For details please log into EOS or EOS mobile"

The Recipient Coordinator [REDACTED] from University Wales, Cardiff (UHCW) contacted the Duty Office and expressed an interest in this renal fast track offer. [REDACTED] was informed that St James Hospital, Leeds currently had the offer.

St James, Leeds then contacted the Duty Office to question why the second kidney had been declined. They were informed this was because of the past history and cause of death. St James, Leeds then accepted the second kidney. Shortly afterwards they requested further information directly from the SNOD who advised that all relevant information was on EOS and no further information could be provided. St James, Leeds then declined both kidneys on past history and cause of death.

The Duty Office then contacted UHCW to ask if they still wished to consider the offer as Leeds were now declining on the cause of death. The Recipient coordinator accepted both kidneys at this point. Transcript of this call is attached in appendix 3.

The only further conversation which took place following this acceptance on the night of donation between UHCW and the Duty Office was between the Tissue Typist and the Duty Office. Full details of phone records are attached in appendix 4. There are no conversations between the Specialist Nurses in Organ Donation (SNOD) and UHCW noted in the records.

Renal Recipients

Recipient 1 was a 67 year old male with a background of polycystic kidney disease. No other significant medical conditions were noted. He received his renal transplant on 30th November 2013 and was discharged from hospital on 6th December 2013. He was seen as an outpatient on 10th December 2013 and was well. However, on his way home he became confused, sweaty and unsteady. The GP referred him back to hospital that same day. He was admitted and the diagnosis of encephalitis was made. The first two head CT scans were reported as showing no abnormality. Later investigations showed cerebellar changes. The patient died on 17th December 2013.

Recipient 2 exhibited a similar progressive clinical picture to Patient 1, except that in this case ventricular dilation was noted. The onset of symptoms also commenced on 10th December 2013 and he died on 19th December 2013.

The findings on the CSF from both recipients failed to grow any organisms and both had negative PCR tests for pneumococcus, meningococcus, HSV (Herpes simplex virus) 1 and 2, enterovirus and varicella zoster virus (appendix 5).

NHSBT Investigation

Having received a report of this incident, NHSBT commenced an investigation which included the review of EOS records, phone records and notes of offering. It was concluded that all relevant information was present on EOS at the time of offering. Both kidneys had been accepted and transplanted with the full knowledge of the donor's undiagnosed possible viral encephalitis.

The death of a donor from an undiagnosed encephalitis linked to two further cases constituted a notifiable case of disease representing a hazard to human health (as defined in Section 3 (1) of the Health Protection (Notification) Regulations 2010). Therefore NHSBT's Professor James Neuberger sanctioned the release of the donor's details, including usual place of residence, to enable an environmental health assessment of the conditions in which the donor lived prior to succumbing to this infection.

Prior to the recipients' deaths, there was collaboration between the relevant laboratories in Cardiff and [REDACTED], together with the Public Health England (PHE) laboratory in Colindale. Subsequently, when post-mortem material was available, this collaboration extended to scientists from both Porton Down (UK) and the Centers for Disease Control and Prevention, Atlanta (USA) to identify the causative organisms.

In the course of these investigations, brain tissue from both recipients was examined histologically at Guy's and St Thomas's NHS Trust. It was reported that both patients' brain tissue were "full of nematode larvae", suggesting a diagnosis of Visceral Larva Migrans. The nematode is being characterised by [REDACTED], Consultant Parasitologist at the Hospital for Tropical Diseases, London, and [REDACTED], Professor of Viral Pathogenesis at the Wellcome Trust Sanger Institute, London.

This nematode poses very little risk to contacts of the two recipients if normal hygiene is carried out. It has been confirmed that there have been no secondary cases among health care workers (including National Organ Retrieval Service Team and ICU), family members or laboratory staff. It was noted that the donor and the two recipients were immunosuppressed. This may have predisposed them to developing illness following exposure to agents which may not cause clinical illness in contacts.

It has been agreed that the most likely transmission route for the parasite was through scratches or other breaks in skin while the donor was [REDACTED]. Further details of his social circumstances are provided below.

Donor Social and Medical Background Determined Post Organ Donation and during the Investigation in conjunction with Public Health England

Enquiries confirmed that the donor was a loner who did not socialise apart from meeting with five other people, including [REDACTED] partner, to play board games every two weeks. [REDACTED] had no known recent contact with animals or wildlife. [REDACTED] had owned a cat until 4 years prior to [REDACTED] death. Following donation, the SNOD became aware of concerns held for some time by the donor's GP; prior to [REDACTED] final illness, the donor had had minimal contact with [REDACTED] GP and had failed to answer phone calls from the surgery.

Because of these concerns, the GP had visited the donor's house but there was no answer. A neighbour advised him that the donor never answered the door. [REDACTED]

[REDACTED] partner also reported that during the last few months the donor had several bruises and recent scratches on [REDACTED] back.

[REDACTED]

[REDACTED]

Summary of actions following investigation

Action	Responsibility	Outcome
1. NHSBT to organise a half day meeting for lessons learned over this sad case.	Professor J. Neuberger	To be arranged after investigation complete
2. Nematode species to be further defined	Professor [REDACTED] [REDACTED]	Awaited
3. Email to be sent to Transplant Units to highlight learning from case	Professor J. Neuberger	Completed 18.12.13
4. Case to be included in the Associate Medical Director's Bulletin & Cautionary Tales	Professor J. Neuberger	Completed January 2014

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