

Inquests - Mulengg

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Medical report on: Sarah Louise Mulenga

Report prepared by: Dr G R Park BSc MA MBChB DMed Sci MD FRCA
Consultant in Anaesthesia and Intensive Care

Instructed by: HM Coroner Mr Chinyere Inyama

Report Date: 12 February 2013

Subject matter: Death

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1. Introduction

1.1. I am instructed to look at the papers available touching on the death of Sarah Louise Mulenga.

1.2. I am asked to:

- 1.2.1. Explain the symptoms and physiological processes that lead to death.
- 1.2.2. What treatment would have been appropriate and whether that treatment would be available in an ambulance or only in hospital.
- 1.2.3. What time was death inevitable.
- 1.2.4. If the first crew had attended after the 1614h would the patient have died in any event.
- 1.2.5. Did the actions / omissions of the crew who attended at 16.50h make any difference to the outcome.

1.3. To assist me with this I am provided with the following notes:

- 1.3.1. LAS record sheet LA4 dated 9 January 2011 and timed 1742h.
- 1.3.2. Newham Hospital records dated 9 January 2011.
- 1.3.3. Post mortem Report Prof Baithun Performed 11 January 2011
- 1.3.4. Letter of complaint by Chinwe Moneke (includes account of events) dated 12 January 2011
- 1.3.5. Investigation interview Lisa Turk dated 24 January 2011
- 1.3.6. Investigation interview Jane Kent dated 24 January 2011
- 1.3.7. Statement Dr Bill Coode dated 17 April 2011
- 1.3.8. Statement Samantha Jane Smith dated 20 May 2011
- 1.3.9. Statement Gary Barrett dated 10 June 2011
- 1.3.10. Statement Allan Grace dated 12 June 2011
- 1.3.11. LAS Serious Incident investigation STEIS 2011 1445 dated 28 June 2011
- 1.3.12. Statement Rebecca Jane Bozdan dated 28 July 2011

1.3.13. Expert Medical Report by Dr A McCrirrick dated 23 September 2011

1.3.14. Letter of instruction from HM Coroner dated 28 February 2012.

1.4. I will restrict myself to areas where I consider myself to be expert. That is in the management of very sick patients. I consider myself expert in this matter as I have been a consultant in critical care since 1983 when I was appointed to Addenbrooke's Hospital in Cambridge. In 2010 I moved to the North Middlesex University Hospital, again as a consultant and ran the intensive care unit there until January 2013. My abbreviated curriculum vitae is shown in appendix 1.

2. Prologue

- 2.1. I have not written a prologue to a medical report before. However, I have found this one of the most difficult reports I have written because of the conflicts in the evidence I have been given and also some of the omissions in the considered opinions of others and the lack of some other evidence.
- 2.2. Where I come across matters relating to Para 2.1 I will endeavor to explain them at the time they first arise.
- 2.3. Because of these difficulties the true events may only become apparent during the course of the Inquest.

3. History

- 3.1. Ms Mulenga was a 21 year old female at the time of her death.
- 3.2. She had sickle cell trait (telephone call Mr Quinn)
- 3.3. I assume, but do not know, she had black skin because of the sickle cell and African origin. Unfortunately, her skin colour is not described in the postmortem report. Skin colour is crucially important later when the physical signs are considered and the events in the toilet.
- 3.4. She was a final year student (I do not know what she was studying), and did not drink or take drugs according to her family.
- 3.5. Although resident in this country I do not have any history of foreign travel especially back to Africa. A tropical disease, that I am unfamiliar with, is a remote possibility.
- 3.6. I am told she had no UK General Practitioner from whom a detailed medical history could be obtained.
- 3.7. On 31 December 2010 she had been admitted to Queens Hospital, Romford with diarrhea and vomiting for one day. I have not seen any results or investigations from this hospital. I would suggest that these are obtained for the Inquest.
- 3.8. On 9th January 2011 Ms Mulenga was unwell and took to her bed.
- 3.9. At 16.13h Ms Mulenga made a 999 call and asked for an ambulance to take her to hospital because she had "no energy, feeling very weak, body aching and diarrhea".

- 3.10. The landlady (Chinwe Moneke) made a further 999 call at 16.29h explaining Ms Mulenga had breathing problems, was unable to speak and had become cold.
- 3.11. A further 999 call was made at 16.47h from Ms Moneke who reported that Ms Mulenga had sickle cell disease.
- 3.12. An ambulance arrived at 16.50h (47 minutes after the original call).
- 3.13. The ambulance crew obtained some history from Ms Mulenga and there is agreement (or at least no dispute) that:
- 3.13.1. A history of sickle cell disease was obtained, this was not a crisis.
 - 3.13.2. Ms Mulenga wanted to go to Hospital.
 - 3.13.3. Ms Mulenga was incontinent of faeces.
 - 3.13.4. Ms Mulenga did not know she had been incontinent of faeces.
- 3.14. The ambulance crew state that measured the heart rate and it was normal. They also say that respiratory rate was normal on observation.
- 3.15. Ms Moneke says that the ambulance crew did not examine her.
- 3.16. There is further dispute about how Ms Mulenga got to the toilet. The Landlady says Ms Mulenga was finding it difficult to sit up, but did and then needed help to walk to the toilet. The ambulance crew say she walked unaided to the toilet. They also say she did not feel dizzy. With reference to this please see my comments later once the haemoglobin was known.
- 3.17. Once in the toilet communication became difficult. Unfortunately, I have been unable to obtain any information about the toilet, except it was a small room and not a bathroom.
- 3.18. Once in the toilet the door was partially closed. At first there was a conversation but both reports agree talking stopped after a while.
- 3.19. She was in the toilet for about 20 minutes.
- 3.20. Her feet were jammed against the door, preventing it opening.
- 3.21. Although talking had stopped the ambulance crew say she was moving her head as if to say no.
- 3.22. The ambulance crew left, reporting back on duty at 17.26h.

- 3.23. Ms Moneke went back to the toilet after the ambulance crew had left and in her letter states "I checked on Sarah and she had her eyes closed and her head was leaning against the toilet wall, her body was a bit slumped against the cistern".
- 3.24. Ms Mulenga's sister arrived and rang 999 at 17.42h. She was (correctly) told "to lay her straight down"
- 3.25. Various ambulance teams arrived and performed CPR.
- 3.26. Ms Mulenga was transferred to Newham University Hospital, arriving at 18.32h.
- 3.27. Her heart had stopped and was in asystole (no activity at all).
- 3.28. Resuscitation was continued until 19.24h.
- 3.29. It appears to have been correctly performed and I do not think the equipment malfunction (Autopulse not charged) and missing equipment (Adult Needles) altered the outcome.
- 3.30. During the course of the resuscitation two arterial blood gases were done and the results are shown below:

Time	18:37	18:55	
pH	6.255	6.189	
pCO2	10.4	10.0	
pO2	2.32	3.29	
Hb	2.6	2.9	(7.4-10.9)
K	9.9	11.9	
Lac	34	35	

- 3.31. All of these results are highly abnormal and not compatible with survival.
- 3.31.1. The first three results relate to breathing and the amount of acid in the body. I think the blood was not taken from an artery, but from a vein. This would be usual practice in a patient receiving CPR. This makes this part of the result difficult to interpret. If they are from an

artery I would be pleased to produce an addendum. These changes are compatible with a period of cardiac arrest.

3.31.2. The fourth result is the Haemoglobin (Hb). This is extremely low. The difference between it and all the other results is that it takes time for a haemoglobin to get this low. Probably days or weeks (see below).

3.32. The remaining results are all compatible with a prolonged resuscitation attempt, and occur in that time frame.

3.33. There is another laboratory result found in the notes (timed at 19.29h). This one also shows results that are compatible with and occur in the time frame of a cardiac arrest except for the creatinine. This is approximately twice the upper limit of normal.

3.34. Creatinine is usually increased in the Afro-Caribbean population because of their increased muscle mass (creatinine comes from muscle). However, normally it is not increased this much.

3.35. Creatinine also increases with renal disease (see PM report).

3.36. Some increase (usually small) may be seen with a cardiac arrest.

4. Postmortem report

4.1. There are some aspects of this report that I do not understand and others where more detail would be invaluable.

4.2. I note there was no evidence of jaundice.

4.3. Was the congestion in the in the trachea and bronchi associated with resuscitation? (I note it was considered normal).

4.4. How does the congestion and oedema in the lungs differ from that in the bronchi?

4.5. I note the lack of blood in the intestines.

4.6. Both kidneys are scarred. I assume that this takes months to develop?

4.7. Was the atheroma around the Circle of Willis sufficient to interfere with blood flow?

4.8. I note the bone marrow is reported as normal. Has any tissue been retained for further microscopic examination to help elucidate the cause and time of the severe anaemia?

4.9. I note the microscopic changes in the lung “*suggest*” an interstitial pneumonia “*possibly of viral origin*”. Can other causes, for example an immune mediated disease, or a tropical disease explain these changes?

4.10. I note the liver shows “*chronic venous congestion*”.

4.10.1. I assume therefore that this abnormality was not owing to the cardiac arrest or an acute viral illness, does it fit with another chronic disease?

4.10.2. Why was there no jaundice?

4.11. In the kidney microscopy the report says there is acute renal failure along with disseminated intravascular coagulation (when the blood clots in the blood vessels). This may have given rise to the increased creatinine mentioned above. In my experience of patients with acute renal failure this usually takes 24 hours or so to develop. What time frame compatible with the histology?

4.12. Was the vascular congestion in the spleen acute or chronic?

4.13. Could the microscopic changes in the heart been caused by another disease other than viral infection?

5. London Ambulance Service Report

5.1. LAS accept that the 47 min delay in the first ambulance arriving is too long.

5.2. I note the comments about failure to examine and record the results of clinical examination. I agree with them.

5.3. I note both members of the first ambulance crew were trainees from the same intake. I ask the question if it was appropriate for them to be paired together, without supervision, for Category B (and presumably Category A) calls?

6. Comment

6.1. It is usual in reports to leave my opinion as to what happened until the end of this section. However, because of all the uncertainties etc I will start this section with my opinion so how it was derived can be more easily understood by the readers of this report.

- 6.2. I believe that Ms Mulenga died from a faint while sitting on the toilet. There were several contributing factors to this that will be described below.
- 6.3. A faint is when inadequate oxygenated blood gets to the brain. The brain then shuts down. The person becomes unconscious. It most commonly occurs when the brain is higher than the heart and there is insufficient flow and or pressure of blood to supply oxygen to the brain. Usually the person falls to the floor where blood flow to the brain can be restored because the brain is lower than the heart. A common teaching is that it is dangerous to faint in a telephone box because the person cannot fall on the floor. In Ms Mulenga's case she could not fall flat to the floor because she was in a small toilet.
- 6.4. Ms Mulenga, a 21 year old female was incontinent of faeces, but appeared not to have recognized this, nor is there any description of her being embarrassed by this. This may have been an indication that her brain was not working properly (owing to the anaemia and other causes described below leading to poor oxygenation of the brain) and she failed to recognize and respond to this.
- 6.5. When the ambulance crew saw her just after 16.50h they say she had a normal heart and respiratory rate. This conflicts with the cause of death given as a viral pneumonia and viraemia. At 17.42h she suffered a cardiac arrest from which she died. Less than one hour before death I would have expected the heart and respiratory rate to be very abnormal and the patient to look extremely unwell, especially a young person.
- 6.6. The haemoglobin level in the blood was extremely low. The accuracy of the machine on that day has been confirmed by the hospital.
- 6.7. The role of haemoglobin is to carry oxygen from the lungs, in the blood to the tissues where it can be burnt to provide energy.
- 6.8. There are many causes of anaemia:
- 6.8.1. Bleeding is a common cause. But note that bleeding from the gut was not seen at autopsy (this is the commonest cause of hidden bleeding).
- 6.8.2. In the absence of bleeding this takes days or weeks to get this low.

- 6.8.3. Sick cell trait would not be expected to cause an anaemia this severe, but might contribute to other causes.
- 6.8.4. Viral infection and depression of the bone marrow might cause this, but on macroscopic appearance the marrow was normal. No microscopy of the marrow is provided to me.
- 6.8.5. Various chronic diseases can cause this, in particular kidney disease (see below).
- 6.9. What is clear is that at 17.40h Ms Mulenga was profoundly anaemic, probably with a haemoglobin of about 3 g/dL.
- 6.10. Her symptoms of tiredness and breathlessness fit with this.
- 6.11. I would also expect difficulty in sitting up and walking, especially in combination with dehydration from the diahorrea and hypotension from the viraemia (if that was present).
- 6.12. It should be noted that skin colour is important when considering anaemia. In the Caucasian population people would look very pale with a haemoglobin at this level. If this lady had black skin (as I have assumed) then the anaemia would not be seen.
- 6.13. Cyanosis (a blue discolouration of the lips, caused by the lack of oxygenated blood) would not be seen since at least 5 g/dL of haemoglobin are needed for this to be apparent.
- 6.14. Clarification about the time course of this anaemia could be obtained from the Romford notes if it was measured.
- 6.15. The combination of an increased creatinine, pathological changes seen in the kidney, heart and lungs along with the chronic changes seen in the liver, and especially the sever anaemia cause me to ask if Ms Mulenga was suffering from another chronic disease that has so far gone unrecognized? Further information from Romford may help solve this problem.
- 6.16. On the 9th January 2011 Ms Mulenga felt unwell and with a haemoglobin of about 3 g/dL and diarrhea had good reason to be unwell and called an ambulance.
- 6.17. While sitting on the toilet she had a faint. This would have been caused by:

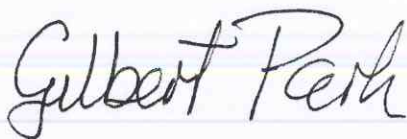
- 6.17.1. The low oxygen carrying capacity of the blood.
- 6.17.2. The dehydration caused by the diarrhea resulting in a lowering of her blood pressure.
- 6.17.3. Being in the upright position (sitting on the toilet)
- 6.18. If
- 6.18.1. She was viraemic this would have contributed to her low blood pressure and increased the risk of fainting.
- 6.18.2. The atheroma in the Circle of Willis was significant this might also have lead to a reduction in cerebral blood flow increasing the risk of fainting.
- 6.19. The faint manifested itself as:
- 6.19.1. Not talking
- 6.19.2. Not moving (blocking the door with her feet)
- 6.20. Because she was jammed against the door, the wall and the cistern in a small room she could not fall to the floor and restore blood flow to the brain.
- 6.21. Cardiac arrest followed the faint.
- 6.22. The treatment was simple, indeed the emergency operator gave it after the cardiac arrest – lie her down.
- 6.23. Would she have survived had she been laid down – probably.
- 6.24. Why was it not recognized?
- 6.24.1. I think the most important factor here is skin colour. Assuming she had black skin the pallor of the anemia was not recognized.
- 6.24.2. The lack of clinical examination further enhanced this. Heart rate would have been elevated and blood pressure lowered. I would imagine that with a severe pneumonic process ongoing in the lungs physical signs would have been present.
- 6.24.3. The failure of Ms Mulenga to recognize faecal incontinence should also have alerted the attendants to her mental state not being normal.
- 6.24.4. Similarly, when told by the landlady the shouting was not her normal type of behavior they again did not recognize abnormal behavior as part of an illness or a faint.

7. Opinion

- 7.1. It is my opinion that Ms Mulenga was suffering from a disease that caused diarrhea and vomiting.
- 7.2. This disease may have been a viral illness or some other illness. Whatever the illness it had been present for many days as it caused a severe anaemia.
- 7.3. On the 9th January she was clearly unwell and needed to be in Hospital as she had a severe anaemia, kidney failure and a pneumonia.
- 7.4. An ambulance was called.
- 7.5. Ms Mulenga was faecally incontinent and while in the toilet fainted.
- 7.6. This was not recognized and she died from the lack of blood to her brain.

8. Statement of truth

- 8.1. I certify that:
 - 8.1.1. Within this report I have set out the substance of all material instructions, whether written or oral, on the basis of which this report is written.
 - 8.1.2. I have endeavored in this report to include those matters which I know of or that I may have been made aware of that might adversely affect my opinion.
- 8.2. I will notify those instructing me immediately if this report needs any correction or qualification.
- 8.3. I understand that:
 - 8.3.1. It is my duty to help the Court on matters relevant to my expertise
 - 8.3.2. I have complied with my duty to the court. I believe the facts I have stated and the opinions I have expressed in this report are true.



Dr G R Park BSc MA MBChB DMed Sci MD FRCA Date 12 February 2013

Appendix: Abbreviated Curriculum Vitae of Gilbert Park

Qualifications

BSc Edinburgh University 1971
MBChB Edinburgh University 1974
FRCA London 1978
MA Cambridge University (Statute B6) 1987
MD Edinburgh University 1990

Honorary appointments

Doctor of Medical Science (*Honoris Causa*) Pleven University 1997

Honorary appointments

Consultant in Anaesthesia and Resuscitation, Royal Army Medical Corp 1986-1992
Visiting Professor Duke University 1994
Member of Honour Bulgarian Society of Anaesthetists 1995
Honorary Member SIAARTI (Italian Society of Anaesthesia and Intensive Care) 2002

Appointments

Chairman Joint Drug and Therapeutics Committee Addenbrooke's Hospital 2003 to date
Lead Consultant for Intensive Care – North Middlesex Hospital (2009 to 2013).
Director of Intensive Care and Consultant in Anaesthesia, Addenbrooke's Hospital 1983 to 2000
Member of Council - Intensive Care Society
Secretary General - World Federation of Societies of Intensive and Critical Care Medicine 2001 – 2005
Member of Council – World Federation of Societies of Intensive and Critical Care Medicine 1997 – 2005
Non Executive Director - United Kingdom Transplant 2001 – 2005
Director of Intensive Care Research and Consultant in Anaesthesia, Addenbrooke's Hospital 2001 to 2009.

Faculty membership

Advanced Bleeding Care
Academy of Infection Management

Publications

Over 130 peer reviewed papers, 20 books, over 20 chapters and over 30 review articles, mostly on pharmacology in the critically ill and anaesthesia.

Main clinical duties

Dr Park works in both the ICU and the operating theatres. The ICU has 14 beds and adult patients are drawn from all specialities except paediatrics, neurosurgery and cardiac surgery. In the operating theatre he anaesthetises for general and orthopaedic surgery.

Main research interests

These centre mostly on pharmacology in the critically ill and during anaesthesia. Included in this are sedation and analgesia and drug metabolism. As his management role has changed so he has become interested in the Health Care Economy, Ethics and Rationing.