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Investigator I/C Case

DSI LITRE

Officer(s) Seizing

INV. SINGHAR

Owner

Address

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Signature

Case Against/Incident

Description of Article

FINAL POST MORTEM
REPORT.

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FINAL REPORT

Date Issued: 18 June 2015

Autopsy No: F00542/2015

Fiscal Ref: KC15002548

Name of Deceased: Sheku Ahmed Tejan BAYOH

Date of Birth: 30 September 1983

Age at Death: 31

Sex: Male

Address: Collette Bell's address at Arran Crescent
Kirkcaldy
Fife

Place of Death: Resus, A&E, Victoria Hospital, Kirkcaldy

Pronounced Dead At: 09:04 Hours on 03 May 2015

Medical Cause of Death:

1a Sudden death in a man intoxicated by MDMA (ecstasy) and alpha-PVP, whilst being restrained

Date of Autopsy: 04 May 2015

Examining Doctors: Dr Kerryanne Shearer/Dr Ralph BouHaidar

Authorising Procurator Fiscal (District): Kirkcaldy

DECLARATION

On the instructions of the Procurator Fiscal at Kirkcaldy we, Kerryanne Shearer and Ralph BouHaidar, registered medical practitioners performed a post mortem examination and dissection on the body of Sheku Ahmed Tejan BAYOH at the Edinburgh City Mortuary, on 04 May 2015.

IDENTIFICATION

The body was identified as being that of the above Deceased by fingerprints. The body was also formally identified to Kerryanne Shearer and Ralph BouHaidar, in person, by the following:

- (1) John Ferguson Inv (PIRC)
- (2) Peter Grady DC (MIT)

Both scene managers dealing with deceased at
Victoria Hospital

BACKGROUND HISTORY

We were informed that on the 2nd of May 2015 this 31 year old man left for work around 07:00 hours. He was in phone contact with his partner throughout the day, returning home at 16:30 hours. At 17:00 hours he left his home address with his partner to carry out general errands. At 17:50 hours he was dropped off at his sister's address to celebrate a family birthday. He reportedly had made provisional plans to socialise with friends and watch a boxing match that evening. It was anticipated that this would continue into the early hours of the 3rd of May. He spoke to his partner at 20:40 hours that day for a general catch-up. At 21:50 hours with a friend he attended at a supermarket and purchased alcohol before returning to his home address. At this point he was described as happy and not heavily under the influence of alcohol. He spoke to his partner at 23:40 hours stating he was at home and in the company of a friend and appeared in good spirits. This was the last formal contact his partner had had with him.

It is then reported that during the early hours of the 3rd of May he was in the company of other witnesses at their address and watched the boxing match, leaving the address around 06:00 hours with his friend. At the locus he reportedly continued to consume alcohol, was not making much sense and appeared confused and was of the opinion others were being disrespectful to him. He left the locus and his friend went after him but could not find him. His friend returned to Mr Bayoh's home address and found him and he reportedly produced a clear bag containing white/purple tablets. They were taken from him and the plan was to flush them down the toilet. His mood was described as continually changing and he reportedly punched his friend in the back of the head. Following this his friend managed to run away. His partner returned to the home address but could not locate him. She did observe that a television was upturned and miscellaneous items were discarded on the floor.

At 07:15 hours Police Scotland received reports that a male was in the area of Henry Street walking in the direction of Hayfield Road in possession of a large knife. Witnesses reported him kicking out and chasing cars and Police Officers were dispatched. Mr Bayoh reportedly engaged with the Officers and a physical confrontation ensued resulting in him being restrained to the ground, handcuffed, with leg restraints being applied. During the restraint he became unresponsive and resuscitation was commenced. An ambulance was called and he was conveyed to the Accident and Emergency Department of Kirkcaldy Hospital where resuscitation was continued but he was subsequently pronounced dead there at 0904 hours.

There were reports that both PAVA and CS gas were deployed by police officers.

The general practice notes were reviewed when received following the post mortem examination. They revealed in 2014 his alcohol intake was noted as being within recommended limits and he was a light smoker. In 2011 it was noted that he had been using anabolic steroids for approximately 2 years, on 6 weekly cycles. In 2013 he had a history of snoring and was seen in the sleep clinic. A home study was to be arranged and the next clinic letter dated 7/11/2013 stated he failed to attend for a sleep medicine appointment.

The Victoria Hospital notes were reviewed when received following the post mortem examination. He was reportedly found by police with a knife, aggressive and pepper gas was used. He was hit on the back of the head and then was in respiratory arrest. With ambulance crew there was cardiac output but no respiratory effort. In resus initially he was ventilated and a pulse was lost within 2 minutes. Resuscitation was commenced. He was treated with intravenous fluids, naloxone and adrenalin and was PEA for most of the first cycle then had three episodes of ventricular fibrillation, was shocked and amiodarone was administered. A right femoral line was put in. An ECHO showed minimal right ventricular movement. He was pronounced dead at 0904 hours. A body temperature was not noted in the notes examined.

A statement from a nurse on duty when Mr Bayoh attended at the Victoria Hospital stated she was tasked with taking his temperature, the result was not documented at the time but she remembers it as being 35.8°C.

Information from the consultant on call at the Victoria Hospital revealed during restraint he had suddenly gone into respiratory arrest and shortly after arrival in resus he had gone onto cardiac arrest.

In a statement taken from a different consultant on call at the hospital, it is stated that following the death of Mr Bayoh she removed an endotracheal tube, defibrillator pads from the chest, a venflon from the left forearm and a femoral line from the right groin.

Witness statements were reviewed following the post mortem examination. One witness lived in a house that looks onto Hayfield Road. Upon looking out

of their window they saw a man going down to the ground with about 6 police officers around him. There were 2 or 3 batons lying on the road and the man was making "roaring" noises and shouting something similar to "get off me". It appeared that the officers were trying to tie his legs with yellow tape. The person could not say if the man was lying on his front or back. A police officer was seen to check if he was breathing as he had gone quiet. Police officers then began CPR.

A second witness saw a police officer with a baton and what appeared to be "pepper spray" in his left hand and a stream of liquid was seen coming from the canister. Following this he saw a "black skinned" man walk out from the side of a police van. A police officer appeared to be saying "get down". Following this other officers appeared. The male seemed to "lounge" at a female police officer and "strike" her. The witness then went to the front garden, taking 10-20 seconds to do this. At this point the male then appeared to be face down on the pavement with 5 or 6 police officers attempting to restrain him. One officer was kneeling on the ground with his arms over the man's shoulder/back of neck area. Other officers appeared to be laying across his body. At this point the witness went back inside their house.

Police statements were reviewed when they were received following the post mortem examination.

One police officer sprayed Mr Bayoh with CS gas whilst being approximately 4-5 metres from him. The spray missed due to wind and was redeployed hitting the top of his left neck/shoulder area. He stopped walking but the spray had no effect on him. He struck Mr Bayoh with a baton 2-3 times to the head and 2-3 times to the arms. Another officer came at this point and "wrestled him to the floor". He was struck on the back of his legs a few times but did not stop so the officer jumped on his legs to try and control him. He was straddling his upper thighs. Two officers were struggling to keep him on the floor. He describes himself controlling the legs, 1 officer controlling his upper body and 2 officers at the head area. After an unspecified period of time Mr Bayoh "calmed down and was not struggling or moving". At this point resuscitation was commenced.

Another officer described how he saw another officer spray him with CS spray but the spray appeared to only affect the officer. This officer deployed his PAVA spray from about 8 feet but it seemed to have no effect. This officer charged Mr Bayoh with his left shoulder and he fell back towards the pavement. He tried to get over the top of his shoulders and hands to get him under control. Mr Bayoh struck out at the officer and the officer punched him around the left cheekbone. Two other officers arrived. A handcuff was placed on his right wrist and then the left arm, cuffing him to the front. This officer then saw that restraints had been placed on the legs (2 Velcro straps, 1 around the ankles and one below the knees). He seemed to stop resisting at this point. Whilst he was on the ground with pressure being applied to his left shoulder, he was thought to be in this position for a maximum of 30 seconds until he broke free after the handcuffs had been placed on him. At the point

that he was lying on his back, handcuffed in front with leg restraints being on, he appeared to be unresponsive. Resuscitation was commenced.

A third officer arrived at the scene to find Mr Bayoh lying on the pavement struggling with officers trying to control him. This officer lay across his legs. Two officers tried to apply Fast Straps to his legs and by this time he was on his front. At some point someone said "get off him" as he was not struggling, Mr Bayoh was still on his front at this time, the left hand side of his face on the pavement. He was then moved on to his side. Resuscitation was commenced.

Another officer describes one officer at Mr Bayoh's head leaning across his shoulders, another leaning on him further down his torso and another trying to control his thighs/hips. Mr Bayoh was seen to struggle. This officer attempted to straighten his legs in order for restraints to be applied. Two straps were applied to the legs. At this point Mr Bayoh was "tilted over on his front", was "moaning" and the plan was to get him on his side. He was then noted to be unresponsive.

A different officer described how an officer sprayed CS spray into Mr Bayoh's face and upper body and Mr Bayoh wiped his left eye with his left hand and "laughed". Two officers were affected by the effects of the spray. He was sprayed again but did not respond to the CS or PAVA. Mr Bayoh then chased the officer and she felt a blow to the back of her head causing her to fall forward towards the ground. She was helped to her feet by another officer and could see Mr Bayoh on the ground and three officers on the ground at both sides and one at his feet.

EXTERNAL FINDINGS

The body was that of a dark brown skinned adult male, well built, measuring approximately 178cm (5ft 10in) in height and weighing 81kg (12st 10lb) – BMI of 25.6. The hair was short and black. The under arm and pubic hair was also short. The eyes appeared dark brown. The teeth were natural and in good condition. The nose was intact. The fingernails were medium length and clean.

Within the right upper conjunctiva were at least eight fine petechial haemorrhages and within the lower right conjunctiva, a collection of coarse and fine petechial haemorrhages, at least four in number and a more confluent haemorrhage over the lower inner border of the conjunctiva measuring 0.3cm in diameter. Over the right side of the sclera just at the border with the pupil was a coarse haemorrhage measuring 0.2cm in diameter. Over the inner aspect of the right side of the sclera was a collection of coarse and pin point haemorrhages, up to eight in number. Within the conjunctiva of the left upper eye was a single coarse petechial haemorrhage measuring 0.2cm in diameter and within the left lower conjunctiva at least seven coarse petechial haemorrhages.

Scars

- Over the right forehead, three circular scars, each measuring 0.2cm in diameter
- Over the left cheek, five circular scars, the largest 0.7cm and the smallest 0.2cm in diameter
- Over the front of the left shoulder, an irregular scar measuring 1.5 across x 1cm up/down
- Over the right upper arm, an ovoid scar measuring 0.7 x 0.5cm
- Over the inner aspect of the upper third of the right forearm, an irregular scar measuring 1.5 x 0.5cm
- Over the radial aspect of the back of the right hand, an irregular scar measuring 2cm in diameter
- Over the back of the knuckle of the right index finger, an irregular scar measuring 2cm in diameter
- Over the back of the upper third of the left upper arm, a circular scar measuring 0.5cm in diameter
- Over the outer aspect of the middle third of the left upper arm, a circular scar measuring 0.7cm in diameter
- Over the back of the lower third of the left upper arm, a vertical scar measuring 1.2cm in length
- Over the left thenar eminence, an irregular scar measuring 1.5 x 0.2cm
- Over the right knee, at least four irregular scars, the largest measuring 2cm in diameter
- Over the front of the middle third of the left shin, two white scars, measuring 1cm and 0.5cm in diameter
- 3cm below the scars described directly above, a further white scar measuring 0.2cm in diameter

Rigor mortis was passing and post mortem hypostasis was present over the back of the body.

Signs of medical intervention

- Over the back of the right hand, a needle puncture mark and this was associated with swelling of the hand
- Within the crease of the left elbow, a dressing and underlying this a needle puncture mark
- Over the radial aspect of the back of the right wrist, two possible needle puncture marks
- Within the right groin, stitching and associated with this two puncture marks and two further needle puncture marks

Injuries

Head and Neck

1. Over the left forehead, its upper end 1cm in front of the hairline and inner end 3cm to the left of the mid line, an irregular abrasion measuring 3.5cm across x 3.5cm up/down
2. 0.5cm in front of Injury No. 1, directly above the outer half of the left eyebrow, an abrasion measuring 3cm across x 2cm up/down
3. Within the upper mouth at the border of the upper lip and mucosa, a superficial 'S' shaped laceration measuring 1.2cm in length
4. Over the right upper lip just at the border with the mucosa, a collection of up to seven superficial lacerations, in a total area measuring 3.5cm across x 1cm up/down, the longest measuring 1cm in length and shortest 0.1cm in length
5. Over the left upper lip at the border with the mucosa, a red bruise measuring 0.2cm in diameter
6. Within the gum-line at the left upper central incisor tooth, a curved superficial laceration measuring 1cm in length, concave superiorly and following the border of the tooth
7. Within the left side of the lower aspect of the mouth in the mucosa, a superficial laceration measuring 0.2cm in length
8. Within the left side of the lower aspect of the mouth within the mucosa 0.5cm to the left of the mid line, a superficial laceration 0.2cm in length
9. Within the right side of the lower aspect of the mouth within the mucosa, a collection of at least five superficial lacerations in a total area measuring 1.5cm up/down x 1cm across, the longest measuring 0.2cm in length and the shortest 0.1cm in length
10. Over the lower lip in the mid line, three horizontal superficial lacerations, upper measuring 0.3, middle 0.2 and the lower 0.1cm in length

Trunk

11. Over the right mid chest extending from the mid line, its upper end 8cm below the right clavicular head and lower end 20cm above the umbilicus, patchy irregular abrasion measuring 8cm up/down x 5cm across comprising numerous intermittent abrasions, the largest 1.5cm x 0.1cm, and smallest 0.1cm in length

Right Arm

12. Over the back of the hand just proximal to the knuckle of the little finger, an irregular superficial flapped laceration measuring 0.5cm up/down x 0.4cm across and flapped to the left

Left Arm

13. Over the back of the lower half of the upper arm, an irregular abrasion measuring 8cm up/down x 5cm across

14. Over the ulnar aspect of the elbow, an irregular abrasion measuring 4cm across x 2.5cm up/down
15. Over the front of the middle third of the forearm, a horizontal superficial wound measuring 1.2cm in length
16. Around the lower third of the forearm its distal end 5cm from the wrist, a band of brown discolouration extending over the back of the arm and measuring 1.9cm in maximum width. The band appeared to extend around to the front of the arm but there present only as a single line of brown discolouration measuring up to 1 cm in maximum width and this being 2cm proximal to the wrist. At the upper aspect of the band at the ulnar border of the arm there was a line of abrasion measuring 0.2cm in length and at the lower aspect of the band also at the ulnar aspect of the arm was an oblique abrasion measuring 0.3cm in length
17. Over the back of the lower third of the forearm, a horizontal linear abrasion measuring 0.2cm in length
18. Over the ulnar aspect of the front of the lower third of the forearm, two almost horizontal linear abrasions, upper measuring 1.7cm and the lower 1.7cm in length and separated by up to 0.1cm in width
19. Over the back of the proximal phalanx of the index finger, a flapped superficial laceration measuring 0.6cm in length and flapped superiorly

Right Leg

20. Over the front of the middle third of the shin, a healing wound measuring 0.5cm in diameter
21. Over the front of the lower third of the shin, a scabbed wound measuring 0.2cm in diameter

Left Leg

22. Over the inner aspect of the knee, an abrasion measuring 1.5cm in diameter
23. Over the front of the upper third of the shin, an area of superficial skin loss measuring 0.1cm in diameter

INTERNAL FINDINGS

Head and Neck

The scalp and skull were intact. There was an area of left frontal subgaleal haemorrhage underlying injury No. 1 measuring 2cm in diameter and a bruise within the left temporal muscle measuring 0.5cm in diameter. The main arteries at the base of the brain and carotid arteries appeared normal. The brain (1440g) over the superior aspects of both cerebral hemispheres showed cloudy/white discolouration particularly at the mid line. The brain was retained in its entirety for examination by a Neuropathologist and examined, sampled and returned to the body.

The mouth was as described above. The tongue was normal. The pharynx was normal. A layered neck dissection (front and back) was carried out and

there was no evidence of haemorrhage into the muscles of the neck and the laryngeal skeleton was intact. The thyroid gland (90g) appeared uniformly enlarged but with no focal nodules noted.

A facial dissection was undertaken and over the right cheek within soft tissue and right masseter muscle was an area of haemorrhage measuring 6 x 3cm. Over the left anterior zygoma was an area of soft tissue haemorrhage measuring 1cm in diameter and over the upper orbits bilaterally was an area of subgaleal haemorrhage measuring in total 6cm across x 2cm up/down. There was no obvious bony injury.

The cervical spine was intact.

Chest

The ribs appeared intact. Each pleural cavity contained approximately 20 mls of straw-coloured fluid and there were no adhesions. The trachea and major bronchi contained a small volume of dark brown fluid. The lungs (right 860g; left 790g) were congested and oedematous, but showed no other obvious significant gross abnormality. There was no evidence of pulmonary thromboembolism.

The pericardial sac was normal. The heart (430g) was of normal size and configuration. The coronary arteries, myocardium and cardiac valves were normal.

The aorta was normal.

The oesophagus contained a thin film of bilious fluid and the mucosa was normal.

Following the CT examination which was undertaken after the post mortem, the 7th cervical vertebra and left 1st and 2nd ribs were re-examined. Vertical incised wounds were seen to extend through the anterior aspect of the 7th cervical vertebral body on the right and left aspects, the wound deeper on the right. These wounds were created by the saw when used to remove the cervical spine for further examination at the time of the post mortem.

Soft tissue overlying the front of the posterior part of the left first and second ribs (just adjacent to the thoracic spine) was removed and revealed focal possible soft tissue haemorrhage measuring 0.5cm in diameter overlying the 1st rib. Underlying this there appeared to be a fracture through the rib. There was no evidence of injury to the left second rib.

Abdomen

The peritoneal cavity was dry and there were no adhesions. The stomach contained a small amount of dark green fluid and the gastric mucosa was normal. The small and large intestines were normal.

The liver (1800g) appeared congested and showed focal pale areas. The gallbladder was normal and the biliary tract was patent. The pancreas, spleen (90g) and adrenal glands were normal.

The kidneys (combined weights 290g) were normal externally and on sectioning. The bladder contained a large quantity of urine and the mucosa was normal. The genitalia were normal.

MUSCULOSKELETAL SYSTEM

A subcutaneous dissection was undertaken on the trunk and limbs. The results of this were as follows:

- Over the left upper back, an area of subcutaneous haemorrhage extending into muscle and measuring 1cm in diameter
- Over the radial aspect of the right wrist, an area of subcutaneous haemorrhage measuring 0.2cm in diameter
- Underlying the needle puncture mark over the back of the right hand, an area of subcutaneous soft tissue haemorrhage measuring 5cm up/down x 4cm across
- Over the back of the middle third of the left upper arm, an area of subcutaneous haemorrhage measuring 2cm in diameter
- Underlying the needle puncture mark within the left elbow, an area of subcutaneous haemorrhage measuring 3cm in diameter
- Underlying the injury described around the left wrist, a rim of subcutaneous haemorrhage measuring in total 11cm across x 1cm up/down
- Over the inner upper third of the right thigh 18cm below the penis, an area of subcutaneous soft tissue haemorrhage measuring 4cm up/down x 1cm across
- Over the outer middle third of the right shin, an area of subcutaneous soft tissue haemorrhage which superficially extended into the muscle and measured 7cm up/down x 4cm across
- Over the inner aspect of the lower third of the left thigh 30cm below the penis, an area of subcutaneous soft tissue haemorrhage which extended into muscle and measured 7cm up/down x 4cm across
- Over the front of the upper third of the left shin 19cm above the ankle, an area of subcutaneous soft tissue haemorrhage measuring 3cm up/down x 1cm across

There was no evidence of fracture or deformity.

FURTHER INVESTIGATIONS

Radiology – Following the post mortem examination a skeletal survey and CT examination was undertaken.

Histology – small tissue samples were retained.

Neuropathology – the brain and cervical spinal cord were retained in their entirety for formal neuropathological examination before being examined, sampled and returned to the body.

Toxicology – Four hospital blood samples, two post mortem peripheral blood samples and two post mortem urine samples were retained.

Bacteriology – A brain swab and small sample of brain tissue were retained.

Virology – a small sample of brain tissue was retained.

Other productions for Police:

- Body bag
- Other bags – head, right hand, left hand
- Body sheet
- Hair – head (shaved)
- Swabs – mouth (dry)
- Swabs for toxicology – facial swabs (wet and dry), mouth swabs (wet and dry), nasal swabs (wet and dry)
- Sections of the right and left lung (for toxicology)
- Nail scrapings – wet and dry (right and left hands)
- Blood for DNA grouping

OPINION AS TO CAUSE OF DEATH (as appearing on death certificate):

1a Unascertained (pending further investigations)

Death certificate was issued by Dr Kerryanne Shearer.

TOXICOLOGY

Two peripheral post mortem blood samples and two post mortem urine samples were received and analysed for alcohol and prescription/illicit drugs, including anabolic steroids. Four hospital blood samples were also submitted. The results are as follows:

Blood (preserved) -	Alpha-pyrrolidinovalerophenone: 0.31mg/L (Alpha-PVP)
Blood (unpreserved) -	Methylenedioxyamphetamine: 0.66mg/L (MDMA)
	Methylenedioxyamphetamine: <0.20mg/L (MDA)
	Alpha-PVP: 0.29mg/L
Urine (preserved) -	Alpha-PVP: Present

Urine (unpreserved) - MDMA: >3.75mg/L
MDA: 1.25mg/L
HHMA: 1.50mg/L
HMMA: 0.38mg/L

Hospital blood
(taken on 03/05/2015) - MDMA: 0.65mg/L
MDA: 0.23mg/L
Alpha-PVP: 0.07mg/L

Hospital blood
(taken on 03/05/2015) - MDMA: 0.48mg/L
MDA: <0.2mg/L
Alpha-PVP: 0.07mg/L

Hospital blood
(taken on 03/05/2015) - Alpha-PVP: 0.07mg/L

All other analyses were negative.

A urine sample was sent to Kings College London and analysed for urinary androgens and synthetic anabolic steroids. This showed the presence of nandrolone and metabolites, consistent with the recent administration of the anabolic steroid nandrolone.

Several items seized from Mr Bayoh's house were analysed by Forensic Services Scottish Police Authority. These comprised boxes and bottles of tablets and some loose tablets. The drugs were analysed for the presence of drugs controlled within the provisions of the Misuse of Drugs Act 1971 and the majority had a negative result. In one bottle containing tablets the presence of caffeine was indicated but not confirmed and two boxes of tablets were omeprazole and notably packaged appropriately.

MICROBIOLOGY

A brain swab and small piece of brain tissue was submitted to microbiological examination.

Brain swab - no pathogenic Neisseria species was isolated. Staphylococcus epidermidis and Stenotrophomonas maltophilia were isolated.

Brain tissue -no pathogenic Neisseria species was isolated. From the culture broth Streptococcus parasanguinis was isolated.

These results were discussed with a Microbiologist who stated that given there was no history of previous neurosurgical intervention these results were very likely from post mortem contamination.

VIROLOGY

A brain swab was submitted for virological examination. The results are as follows:

Enterovirus PCR negative
HSV1 - PCR negative
HSV2 - PCR negative
Mumps virus – PCR negative
Parechovirus virus – PCR negative
Varicella-Zoster – PCR negative

HISTOLOGY

Brain – There is no evidence of meningitis or encephalitis.

Heart – The heart was mapped and the sinoatrial (SA) node and atrioventricular (AV) node sampled.

SA node – No obvious significant abnormality.

AV node – No obvious significant abnormality.

Ventricular mapping – There is no evidence of significant abnormality in the sections examined.

Lung – There are extensive congestive features and areas of pulmonary oedema. There are widespread areas of subpleural chronic inflammation and pigment laden macrophages.

Liver – Autolysis precludes accurate assessment, but there is no evidence of obvious significant abnormality.

Pancreas – Autolysis precludes accurate assessment, but the normal lobular architecture appears maintained and there is no evidence of obvious inflammation.

Adrenal glands – There is no obvious significant abnormality in the sections examined.

Thyroid gland – The two sections taken were reviewed by an Endocrine pathologist. Although autolysis and only two sections being available limits assessment, the appearances would be in keeping with a multi-nodular goitre. There are very focal areas of chronic inflammation but no evidence of malignancy.

Kidneys – Autolysis precludes accurate assessment, but there is no obvious evidence of significant abnormality in the sections examined.

Left first rib – A fracture is confirmed but there is no evidence of obvious associated haemorrhage and a special stain for iron is negative.

RADIOLOGY

Following the post mortem examination a skeletal survey was undertaken. A summary is as follows and a full report is available.

Radiology demonstrated no bony abnormality. Due to the nature of the body the lateral spine could not be visualised.

On 27th May 2015 the body was re x-rayed to obtain the images that were unable to be done at the time of the previous x-ray. Due to decomposition change it was not possible to get meaningful images of the lateral spine. As such a CT examination was undertaken on the body on 28th May 2015.

The CT examination showed (a summary is as follows and the full report is available):

There is significant gas within intervertebral veins throughout the visualised cervical and thoraco lumbar spine. However, there is a particularly linear distribution of air within C7, extending from the vertebral body to the posterior elements bilaterally. Although this may represent artefact, given the rib findings detailed below, direct visualisation is advised.

There is well defined, linear lucency in the medial, posterior aspect of the left 1st rib, proximal to its junction with the 1st thoracic vertebral body. This involves the anterior cortical surface only. There is significant post mortem gas formation in this region. Given the extensive artefact the significance of this is uncertain, and direct visualisation is advised. There is a similar but less marked appearance of the left 2nd rib, in the same position.

The post mortem chest x-ray taken previously was reviewed and did not show an obvious fracture in these locations.

NEUROPATHOLOGY

The whole brain and cervical spinal cord were retained in their entirety for formal neuropathological examination before being examined, sampled and returned to the body. A summary is as follows and the full report is enclosed (see report N262/2015)

Neuropathological examination has demonstrated changes consistent with evolving global ischaemic brain injury. There is no evidence of any significant traumatic injury to this brain and no infectious disease such as meningitis or encephalitis. No natural disease is noted to account for death. The changes all appear secondary to cardiac arrest with resuscitation and a short survival period.

FINAL CNS AUTOPSY DIAGNOSIS

BRAIN – EVOLVING GLOBAL ISCHAEMIA

CONCLUSIONS

The circumstances provided describe police officers using both PAVA and CS gas. He reportedly received blows with a baton to the body. Mr Bayoh was then restrained to the ground, handcuffed and had leg restraints being applied. During the restraint (time unspecified) he became unresponsive and resuscitation was commenced. He was in respiratory arrest before going into cardiac arrest shortly after arrival at hospital.

Post mortem examination showed no evidence of natural disease that would have played any role in death here. The thyroid gland was enlarged but not to such an extent that it would have caused airway compromise.

In terms of injury to the body, there were a number of minor blunt force injuries, namely bruises, lacerations and abrasions to the head, face, trunk and limbs. Internal examination revealed a fracture to the left first rib, just beside the spine and this could have been sustained whilst he was being restrained, albeit the possibility of it occurring during resuscitation cannot be completely excluded. Notably, in keeping with the history of him being restrained there was an injury to the left wrist (injury 16) with corresponding bruising into the subcutaneous tissue. Internal examination of the head and face showed several areas of bruising in keeping with blunt force impacts to these areas (and could be in keeping with being sustained as a consequence of baton use), but there was no evidence of fracturing of the skull or facial bones. Neuropathology was undertaken which showed changes consistent with evolving global ischaemic brain injury secondary to cardiac arrest with resuscitation and short survival period, but no other significant abnormality, including no traumatic injury. Notably there was no evidence of injury to the body that would account for death here.

Toxicology revealed in hospital blood, post mortem blood and post mortem urine the presence of MDMA (ecstasy), MDA and alpha-PVP. HHMA and HMMA are both metabolites of MDMA. MDA is also a metabolite of MDMA but can be encountered on its own or as a constituent of ecstasy tablets. If its level in blood is lower than that of MDMA, as was the case here, it is likely to be present as a metabolite of MDMA, rather than a separate drug on its own.

MDMA is a stimulant drug that can result in sudden death from a fatal cardiac arrhythmia and /or seizure, albeit there was no history of a seizure in this case. Alpha-PVP is a substituted cathinone and the Database on New Drugs reports a number of health risks associated with this drug including neuropsychic (euphoria, psychomotor agitation, hallucinations/ delusions, seizure/tremor and paranoia) and cardiovascular (hypertension, tachycardia). This may explain his behaviour prior to his death. With regards to this drug there is limited information about acute intoxication and fatal cases but its effects appear similar to that seen in acute cathinone toxicity¹. Cathinones

have stimulant effects similar to amphetamine and as such could also result in a fatal cardiac arrhythmia².

Toxicology also revealed in urine nandrolone and metabolites, consistent with the recent administration of the anabolic steroid nandrolone. Given there was no evidence of heart disease, this drug is unlikely to have played a role in death here.

With regards to the role PAVA and/or CS sprays may have played in death here, from the information made available from police officers it would appear that the use of these substances had no immediate effects on Mr Bayoh. In addition, one civilian witness describes how he had been on his feet and moving after one of these substances were deployed. From the literature available³, it would appear specific side effects include bronchospasm and laryngospasm and patients with pre-existing respiratory disease (which did not appear to be the case here) are more at risk from severe effects. Pre-existing cardiac problems can be worsened, but there was no post mortem findings to suggest Mr Bayoh had a pre-existing heart abnormality. Samples of blood and lung tissue were taken at the time of the post mortem should analyses for these substances be available, but several forensic laboratories in Great Britain were contacted and none were able to offer this service. There was no information found in the literature of cases, especially when there was no pre-existing cardiac or lung problems, where these sprays played a direct role in death.

Given the circumstances provided, toxicological findings and lack of another cause of death at post mortem, the possibility of excited delirium syndrome has been considered in this case. It is however a psychiatric and not a pathological diagnosis and there is some debate in the forensic community with regards to its application as a cause of death. That said, there is a great deal of literature looking at this syndrome especially with regards to the circumstances described in this case, but it has to be remembered that it should be considered in conjunction with circumstantial information (namely a history of restraint) and toxicological findings.

Excited delirium syndrome⁴ is described as a life threatening condition that has a variety of causes but is largely associated with drug intoxication, in particular stimulant drugs (MDMA and alpha-PVP are both stimulant drugs). It can include paranoid and aggressive behaviour as was reported in this case and has no pathognomonic findings at post mortem. Individuals suffering from this condition, due to their behaviour often come to the attention of police services and often die during or shortly after restraint, as was the case here. However, it is not completely understood why such individuals die. A number of studies have been undertaken to look at the effect of restraint on breathing, but the full physiological effects of restraint in general is not fully understood. This condition is associated with a range of clinical findings and typically in such cases a high temperature is documented, however that was not the case here, with his temperature in hospital noted as being 35.8°C.

In terms of the history of restraint here, Mr Bayoh was reportedly face down with his hands cuffed in front of him (this is supported by the presence of injury 16), his legs were tied around the knees and ankles and at least four officers were restraining him. Post mortem examination showed the presence of petechial haemorrhages within the eyes and whilst these are not specific and can be seen in someone who has been resuscitated, they could indicate a degree of asphyxia. In this case, given the reported circumstances, possible causes of asphyxia would include positional (the position of the body interferes with breathing) and mechanical (something impeding the body's ability to use muscles for breathing).

Taking everything into consideration, death here was sudden in nature. In summary, there was no evidence of gross or histological natural disease that would account for death. Toxicology revealed MDMA and alpha-PVP and these drugs could potentially have caused sudden death at any time due to a fatal cardiac arrhythmia. That said, it is recognised that restraint in itself can be a cause or contributing factor in some deaths and given the circumstances, in that this man was restrained at the time of his respiratory arrest and post mortem examination showed petechial haemorrhages that may represent a degree of asphyxia, it cannot be completely excluded that restraint has also had a role to play in death here.

Overall it is not possible to be sure what has been the most significant factor in death here and as such the cause of death is best regarded as being: Sudden death in a man intoxicated by MDMA (ecstasy) and alpha-PVP, whilst being restrained.

There were no other significant findings.

The cause of death should therefore be amended to:

- 1a Sudden death in a man intoxicated by MDMA (ecstasy) and alpha-PVP, whilst being restrained

1. *Coppola M, Mondola R. Synthetic cathinones: Chemistry, pharmacology and toxicology of a new class of designer drugs of abuse marketed as "bath salts" or "plant food" Toxicology letters 211 (2012) 144-149.*
2. *Zaitso K, Katagi M, Tsuchihashi H et al. Recently abused synthetic cathinones, alpha- pyrrolidinophenone derivatives: a review of their pharmacology, acute toxicity, and metabolism. For Tox. 2014. 32:1-8.*

3. *McGorrigan J, Payne-James J. Incapacitant Sprays: Clinical Effects and Management. Faculty of Forensic and Legal Medicine. Feb 2010.*
4. *Gill JR. The syndrome of excited delirium. For Sci Med Pathol (2014) 10:223-228.*

[REDACTED]

Dr Kerryanne Shearer
MB ChB FRCPATH MRCP DipFM
Consultant Forensic Pathologist
GMC No. [REDACTED]

[REDACTED]

Dr Ralph BouHaidar
BSc MSc MD FRCPATH
Consultant Forensic Pathologist
GMC No. [REDACTED]

The information above represents our understanding of the views, opinions and circumstances of this case based on the information received to date, either in writing or by oral communication. We reserve the right to reconsider any aspect of this report should a significant typographical or grammatical error, or factual inconsistency, be identified that could be misinterpreted by a reader. We also reserve the right to reconsider any aspect of this report should further factual information arise that contradicts the information provided at the time of the post mortem examination, upon which we have based our interpretations.

LG/KF

Name:	Sheku Ahmed Tejan BAYOH	Autopsy No:	N00262/2015
Date of Birth:	30/09/1983	Procurator Fiscal:	Kirkcaldy
Date of Death:	03/05/2015	Date Report Issued:	20/05/2015
Date of Receipt:	06/05/2015		

BRAIN (REFERRING NUMBER: F00542/2015) EXAMINED ON 06/05/2015 BY DR COLIN SMITH

REASON FOR REFERRAL

Brain referred by Dr Kerryanne Shearer, Forensic Medicine Unit, Pathology Edinburgh Royal Infirmary.

The brain has been examined under the authority of the Kirkcaldy Procurator Fiscal.

CLINICAL SUMMARY

History of MDMA use, aggressive, wielding a knife. Attacks police officer PAVA/CSF Wednesday. Following this hit by baton by police. Restrained on ground, hands cuffed behind back, leg tied behind, on front? uncertain time but thought to be short. Cardiac arrest. Resuscitated for approximately one hour. Died in hospital. Brain 1440g, cloudy discolouration over cerebral hemisphere. ? meningitis, ? trauma.

MACROSCOPICAL EXAMINATION

WEIGHT OF WHOLE FIXED BRAIN – 1500 GRAMS

EXTERNAL EXAMINATION

Vertex: The hemispheres are symmetrical. There is no swelling or atrophy. There is no haemorrhage or exudate.

BASE OF BRAIN

The leptomeninges are thin and transparent. The vessels of the vertebrobasilar system and Circle of Willis are anatomically normal.

CORONAL SECTIONS

No focal lesions are seen in cortical grey matter, white matter or deep grey matter. The ventricular system appears normal.

CEREBELLUM AND BRAIN STEM

The cerebellum appears unremarkable both externally and on sectioning. The substantia nigra is normally pigmented. The midbrain, pons and medulla appear unremarkable.

SPINAL CORD

A retained section of spinal cord has been examined. There is no evidence of haemorrhage. On sectioning there is no evidence of contusional injury.

MICROSCOPICAL EXAMINATION

Sections have been examined from the cerebrum, cerebellum, brain stem and spinal cord. The leptomeninges show mild non-specific thickening over the convexities. There is no inflammation or haemorrhage. There is no evidence of meningitis. The neocortical ribbon shows no evidence of old ischaemic injury. Within the deeper layers of the neocortex, particularly in watershed regions, there are occasional neurons with shrunken nuclei. However there is no cytoplasmic eosinophilia. Similar changes are noted within sector CA1 of the hippocampus. The white matter appears normal. The deep grey nuclei show no significant abnormality. Sections from the cerebellum show a normal population of Purkinje cells. The midbrain, pons and medulla appear unremarkable. Sections from the cervical cord show no abnormality with no evidence of contusional injury.

Immunohistochemistry for beta APP has been undertaken on selected blocks. There is evidence of ischaemic axonal injury within the corpus callosum and parasagittal white matter, in relation to the thalamic nuclei, and extending through the brain stem. No traumatic axonal injury is noted in any of the sections examined.

COMMENT

The clinical history and post mortem findings are noted. Neuropathological examination has demonstrated changes consistent with an evolving global ischaemic brain injury. There is no evidence of any significant traumatic injury to this brain and no infectious disease such as meningitis or encephalitis. No natural disease is noted to account for death. The changes all appear secondary to cardiac arrest with resuscitation and short survival period.

FINAL CNS AUTOPSY DIAGNOSIS

BRAIN – EVOLVING GLOBAL ISCHAEMIA

SIGNATURE OF PATHOLOGIST(S)



**Dr Colin Smith
BSc, MBChB, MD, FRCPath
Consultant Neuropathologist
GMC No. [REDACTED]**

TOXICOLOGY REPORT

Case Name:	Sheku BAYOH	
Our Reference:	FT2015/1158	
Post-mortem Reference:	F00542/2015	
Fiscal Reference:	KC15002548	
Pathologist:	Dr Kerryanne Shearer	
Instructing Authority:	Procurator Fiscal, Edinburgh	
Date of Report:	12 June 2015	
Report Author(s):	Dr Hazel Torrance	Denise McKeown



Summary of Findings

Samples of blood and urine collected at post-mortem and at hospital were analysed for alcohol, prescription drugs, drugs of abuse including alpha- pyrrolidinovalerophenone (alpha-PVP), gases, and beta-hydroxybutyrate (BHB).

The following substances were identified:

- Methylenedioxyamphetamines (MDMA) and methylenedioxyamphetamine (MDA)
- Alpha-PVP

Sample Receipt and Analysis

We the undersigned received two samples of blood and two samples of urine collected post-mortem and one sample of serum and three samples of blood collected ante-mortem. The table below summarises the details of the sample(s) received and the analyses completed.

Sample Type	Sample Reference (Sample ID)	Date Received	Analysis Completed
PM Blood (preserved)	FT2015/1158 (1) (00002672 - PIRC010515/139)	05/05/2015	Alcohol, BHB and alpha-PVP
PM Blood	FT2015/1158 (2) (00002672 - PIRC010515/139)	05/05/2015	Basic drugs, paracetamol, gases, amphetamines, alpha-PVP and drugs of abuse screen
PM Urine (preserved)	FT2015/1158 (3) (00002670 - PIRC010515/141)	05/05/2015	Alcohol and alpha-PVP
PM Urine	FT2015/1158 (4) (00002668 - PIRC010515/142)	05/05/2015	Amphetamines
Hospital Serum Taken 03/05/15	FT2015/1158 (5) (J01568143 - PIRC010515/168)	13/05/2015	Not analysed
Hospital Blood Taken 03/05/15	FT2015/1158 (6) (J01568143 - PIRC010515/168)	13/05/2015	Basic drugs, amphetamines, drugs of abuse screen
Hospital Blood Taken 03/05/15	FT2015/1158 (7) (J01568143 - PIRC010515/168)	13/05/2015	Amphetamines and alpha-PVP
Hospital Blood Taken 03/05/15	FT2015/1158 (8) (J01568143 - Pirc010515/168)	13/05/2015	Alcohol, cannabinoids and alpha-PVP

Results

<u>Blood (Preserved)</u> [FT2015/1158(1)]	Alpha-PVP - 0.31 mg/L	
<u>Blood</u> [FT2015/1158(2)]	MDMA - 0.66 mg/L MDA - <0.20 mg/L	Alpha-PVP - 0.29 mg/L
<u>Urine (Preserved)</u> [FT2015/1158(3)]	Alpha-PVP - Present	
<u>Urine</u> [FT2015/1158 (4)]	MDMA - >3.75 mg/L MDA - 1.25 mg/L	HHMA - 1.50 mg/L HMMA - 0.38 mg/L
<u>Hospital Blood</u> [FT2015/1158 (6)]	MDMA - 0.65 mg/L MDA - 0.23 mg/L	Alpha-PVP - 0.07 mg/L
<u>Hospital Blood</u> [FT2015/1158 (7)]	MDMA - 0.48 mg/L MDA - <0.20 mg/L	Alpha-PVP - 0.07 mg/L
<u>Hospital Blood</u> [FT2015/1158 (8)]	Alpha-PVP - 0.07 mg/L	

All other analyses gave NEGATIVE results.

Interpretation and Opinion
Methylenedioxyamphetamines (ecstasy, MDMA) and metabolite, methylenedioxyamphetamine (MDA)

A single 150 milligramme oral dose of methylenedioxyamphetamines gave an average peak plasma level of 0.465 mg/L at 1.5-2 hours. Five adults who succumbed to MDMA overdose had an average post-mortem blood concentration of 1.8 ranging from 0.6 to 2.8 mg/L.¹



MDA is formed from MDMA by metabolism but is also sometimes encountered as an illicit drug either on its own or as a constituent of Ecstasy tablets. If its presence in blood is due to metabolism of MDMA, it is usually present at a lower concentration than MDMA, as in the present case. HMMA and HHMA are additional metabolites of MDMA.¹

Alpha- pyrrolidinovalerophenone (alpha-PVP)

Alpha-PVP is a synthetic cathinone related to mephedrone. It has been reported in drug seizures across Europe since April 2011², and there are a few publications³⁻⁵ which report toxicity in individuals both surviving ingestion and in fatalities. It is not clear from the literature available what effects would be expected from specific blood concentrations.

Disclosure

Full records of the notes taken in the preparation of this report are available at this laboratory.


Hazel Jennifer Torrance
BSc PhD MRSC
Forensic Toxicologist
University of Glasgow
Denise Anne McKeown
MSci AMRSC
Forensic Toxicologist
University of Glasgow**References**

- ¹ R.C. Baselt, Disposition of Toxic Drugs and Chemicals in Man, Biomedical Publications, Foster City, California, 10th Ed. (2014).
- ² European Monitoring Centre for Drug and Drug Addiction, European Database on New Drugs, Accessed 12 June 2015.
- ³ Eiden, C. et al "Toxicity and death following recreational use of 2-pyrrolidinovalerophenone" Clinical Toxicology (2013), 1-5.
- ⁴ Zaitsu, K. et al "Recently abused synthetic cathinones, α -pyrrolidinophenone derivatives: a review of their pharmacology, acute toxicity, and metabolism" Forensic Toxicology (2014), 32, 1-8.
- ⁵ Marinetti, L.J. et al "Analysis of Synthetic Cathinones Commonly Found in Bath Salts in Human Performance and Postmortem Toxicology: Method Development, Drug Distribution and Interpretation of Results" Journal of Analytical Toxicology (2013), 37, 135-146.

**LOTHIAN UNIVERSITY HOSPITALS DIVISION
MEDICAL MICROBIOLOGY SERVICES**

www.edinburghlabmed.co.uk

F542/15
K145/RO

Clinical Bacteriology, Royal Infirmary of Edinburgh
51 Little France Crescent, EDINBURGH, EH16 4SA

PIN/CHI: XED4235334 /

D.O.B: 30/09/1983

Tel: [REDACTED]

Patient: BOUKOU, SHAKU

Sex: Unknown

Report to: Cons Not Known

Taken: 04/05/2015 16:00

Address: Forensic PM Histology UoE

Received: 05/05/2015 16:36

Clinical Details:

Date Reported: 09/05/2015

? Meningitis
Encephalitis
SUDDEN DEATH

Lab. Ref. No.: MG315787E Spec.: Swab BRAIN

Culture and Sensitivities

No pathogenic Neisseria species isolated

1 Staphylococcus epidermidis 1 cfu
2 Stenotrophomonas maltophilia 1 cfu

Clarithromycin R 1 2
Cotrimoxazole S

Flucloxacillin S 1 2
Trimethoprim S

*normally seen if skull etc.
unusual in environment, if present*

Lab. Ref. No.: MG315788H Spec.: Tissue BRAIN

Culture and Sensitivities

No pathogenic Neisseria species isolated

Broth culture:

Streptococcus parasanguinis isolated

Clarithromycin S

Penicillin S

unlike if

Dlw

Dr [REDACTED]

RECEIVED
13 MAY 2015

*If no previous abs infection re starts
very likely pm contaminants.*

Authorised by: [REDACTED]

**LOTHIAN UNIVERSITY HOSPITALS DIVISION
MEDICAL MICROBIOLOGY SERVICES**

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F SLZ/15
KAS/03

Clinical Bacteriology, Royal Infirmary of Edinburgh
51 Little France Crescent, EDINBURGH, EH16 4SA

PIN/CHI: XED4235334 /	D.O.B: 30/09/1983	Tel: [REDACTED]
Patient: BOUKOU, SHAKU	Sex: Unknown	
Report to: Cons Not Known		Taken: 04/05/2015 16:00
Address: Forensic PM Histology UoE		Received: 05/05/2015 16:36
	Clinical Details: ? Meningitis Encephalitis SUDDEN DEATH	Date Reported: 09/05/2015

Lab. Ref. No.:MG315787E Spec.:Swab BRAIN

Culture and Sensitivities

No pathogenic Neisseria species isolated

- 1 Staphylococcus epidermidis 1 cfu
- 2 Stenotrophomonas maltophilia 1 cfu

.	1 2		1 2
.	Clarithromycin R		Flucloxacillin S
.	Cotrimoxazole S		Trimethoprim S

Lab. Ref. No.:MG315788H Spec.:Tissue BRAIN

Culture and Sensitivities
in progress

RECEIVED
13 MAY 2015

Authorised by : for [REDACTED]

**DEPARTMENT OF
CLINICAL RADIOLOGY**

Royal Infirmary of Edinburgh
51 Little France Crescent
Old Dalkeith Road
Edinburgh
EH16 4SA

Name:
DOB/CHI:

Ref: F542/2015 - KAS/RO
Pathologists: Ralph Bouhaidar

Date: 13th May 2015
Our Ref: SMCL/JH

Date of Radiological Examination – 13th May 2015

Clinical Details

Not known.

Report

Pelvis:

No acute bony injury. Soft tissue gas.

Abdomen:

No acute bony injury. Soft tissue gas.

Left Humerus:

No acute bony injury.

Right Humerus

No acute bony injury.

Left Femur:

No acute bony injury.

Right Femur:

No acute bony injury.

Left Lower Leg:

No acute bony injury.

Right Lower Leg:

No acute bony injury.

Right Forearm:

No acute bony injury.

Left Foot:

No acute bony injury.

Right Foot:

No acute bony injury.

Right Hand:

No acute bony injury.

Left Hand:

No acute bony injury.

Neck and Mandible:

Post autopsy with neck dissection and cervical vertebral manipulation. No mandibular fracture visible.

Skull:

Post craniotomy.

AP Thoracic Spine and Ribs:

Chest post autopsy - lungs cannot be assessed. No overt rib fractures.

Left Forearm

No acute bony injury.

Consultant Radiologist

**DEPARTMENT OF
CLINICAL RADIOLOGY**

Royal Infirmary of Edinburgh
51 Little France Crescent
Old Dalkeith Road
Edinburgh
EH16 4SA

Name:
DOB/CHI:

Ref: F542a/2015
Pathologists: Ralph Bouhaidar

Date: 4th June 2015
Our Ref: SMCL/JH

Date of Radiological Examination – 13th May 2015

Clinical Details

Not known.

Report

CT scan was performed after autopsy. As such there has been significant destruction of several areas of the body including the cervical spine. All of the abdominal and thoracic contents and the brain have been removed and repositioned in the abdomen within a bag.

Extensive putrefaction and marked post mortem air formation.

CT Brain:

The skull has been opened and the brain has been removed.
The orbits remain in situ.

Of the visualised, unopened skull, no other significant bony injury is demonstrated.

Cervical Spine:

The cervical spine has been dissected up to the level of C6. I understand that the bony elements were removed and the canal inspected. I cannot therefore make any meaningful CT assessment.

C7 remains intact and in place.

There is significant gas within intervertebral veins throughout the visualised cervical and thoraco lumbar spine. However, there is a particularly linear distribution of air within C7, extending from the vertebral body to the posterior elements bilaterally. Although this may represent artefact, given the rib findings detailed below, direct visualisation is advised.

There is well defined, linear lucency in the medial, posterior aspect of the left 1st rib, proximal to its junction with the 1st thoracic vertebral body. This involves the anterior cortical surface only. There is significant post mortem gas formation in this region. Given the extensive artefact the significance of this is uncertain, and direct visualisation is advised. There is a similar but less marked appearance of the left 2nd rib, in the same position.

I have reviewed the post mortem chest x-ray taken previously and this does not show an obvious fracture in these locations.

The remainder of the visualised ribs are of normal appearance with no evidence of fracture. The 1st and 2nd ribs on the right hand side are of normal appearance.

Chest/Abdomen and Pelvis:

Meaningful assessment of the soft tissue structures is not possible.

The visualised thoracolumbar spine is of normal appearance. Alignment and vertebral body height is maintained. Spinous processes are intact and the interspinous process distance is maintained. The posterior elements of the thoracic and spinous vertebrae are intact.

The sternum has been opened at autopsy.

The clavicles and visualised scapulae are of normal appearance with no evidence of fracture. Not all of the lateral aspect of the left scapula has been included. The left humeral head has not been included.

The sacroiliac joints are intact.

The sacral ala are intact.

The femoral heads, necks, symphysis pubis and all of the bony pelvis are intact.

The coccyx is intact.

The lower limbs have been scanned to the proximal talus. No bony injury is demonstrated.

Summary:

CT scan performed post autopsy and at a significant interval after death.

Significant artefact as described above.

Appearances of C7 and the left 1st and 2nd posterior medial ribs as described above.

Direct visualisation advised.


Consultant Radiologist

**DEPARTMENT OF
CLINICAL RADIOLOGY**

Royal Infirmary of Edinburgh
51 Little France Crescent
Old Dalkeith Road
Edinburgh
EH16 4SA

Name:
DOB/CHI:

Ref: F542b/2015
Pathologists: Ralph Bouhaidar

Date: 4th June 2015
Our Ref: SMCL/JH

Date of Radiological Examination – 13th May 2015

Clinical Details

Not known.

Thoracic Lumbar and Skeletal Survey:

The patient returned for repeat thoracic and lumbar spine x-ray.

Unfortunately the level of decomposition meant that meaningful images could not be obtained.

The patient subsequently attended for a CT examination and a report has been issued.


Consultant Radiologist