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THE QUEEN'S UNIVERSITY OF BELFAST

NORTHERN IRELAND OFFICE

REPORT OF AUTOPSY

Name: Robert HAMILL      Sex: Male      Age: 25 yrs      F.No: 48,933  
 Date of Death: 8th May, 1997      JC  
 Date and Hour of Autopsy: 9th May, 1997      2.30 pm  
 Place of Autopsy: The Mortuary, Royal Victoria Hospital, Belfast

CAUSE OF DEATH:

I(a) DIFFUSE BRAIN INJURY

associated with

FRACTURE OF SKULL

due to

(b) BLOWS TO HEAD

On the instructions of HM Coroner for Greater Belfast, Mr J L Leckey, LLM, I, Jack Crane, MB, BCh, FRCPath, DMJ(Clin et Path), FFPATHRCPI, registered medical practitioner, State Pathologist for Northern Ireland, Professor of Forensic Medicine at the Queen's University of Belfast and Consultant in Pathology to the Northern Ireland Health and Social Services Boards, made a postmortem examination of the body of -

ROBERT HAMILL

aged 25 years

identified to me at the Mortuary, Royal Victoria Hospital, Belfast on

Friday, 9th May, 1997 by Detective Inspector [REDACTED], RUC Lurgan.

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During the course of the autopsy photographs were taken at my direction by Mr [REDACTED], RUC Photography Branch.

The following item of clothing was first removed from the body:

- 1 Red boxer shorts.
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**EXTERNAL EXAMINATION:**

The body of a young man of average build weighing 75 kg and measuring 175 cm in length. Rigor mortis was present. Hypostasis of purple colour stained the back of the body.

Injuries were present in the following situations:

**Head:**

- 1 An area of red abrasion, 15 mm diameter, on the left side of the forehead above the temple and close to the hairline. Within it was a fine linear pinkish-red scar, 2 cm long.
- 2 A resolving reddish-purple bruise, 25 mm long x up to 9 mm broad, across the upper eyelid of the left eye.
- 3 A spot of abrasion, 2 mm diameter, on the naso-labial fold close to the left nostril.

**Trunk:**

- 1 A fading yellowish-purple bruise, probably associated with a surgical suture, 2 cm diameter, on the front of the right shoulder.
- 2 A fading yellowish-green bruise, 2 x 1 cm, on the front of the abdomen, 8 cm to the left of and 1 cm above, the umbilicus.

Left Upper Limb:

- 1 Two fading greenish-purple bruises, 1 cm diameter and 2.5 x 1.5 cm, on the outer side of the upper arm.
- 2 A number of blotchy fading bruises, the largest 3 x 2 cm, on the back of the forearm and wrist and on the back of the hand.

Right Upper Limb:

- 1 A fading greenish-yellow bruise, 3.5 x 2 cm, on the outer side of the upper arm.
- 2 A fading bruise, about 2 cm diameter, on the front of the forearm close to the fold of the elbow.
- 3 A fading bruise, 15 mm diameter, possibly related to two needle punctures, on the back of the hand just proximal to the metacarpo-phalangeal joint of the index finger.

Right Lower Limb: An area of indistinct yellow bruising, 12 x 14 cm, with more definite resolving bruising at its posterior extremity on the outer side of the pelvis and extending onto the buttock.

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The following signs of treatment were present:

- 1 Multiple needle puncture wound on both sides of the neck, above the inner end of the right collarbone and below the outer half of the collarbone.
- 2 Needle puncture marks in the fold of the left elbow, on the thumb side of the wrist and on the back of the hand.
- 3 Intravenous cannulae projecting from the right forearm and the back of the right wrist.
- 4 Needle puncture marks on the top of the left foot.

5 A needle puncture mark on the top of the right foot. An intravenous cannula also projected from the medial side of the foot.

6 A urinary catheter projecting from the penis.

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Eyes and Conjunctivae: Normal.

Ears: Normal.

Nose: There was a little scabbed excoriation of the left nostril.

Left Upper Limb: There was a tattoo, in coloured pigments, on the outer side of the upper arm.

Right Upper Limb: The letters "R H" had been tattooed on the outer side of the upper arm.

Scrotum: Testes present.

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INTERNAL EXAMINATION:

HEAD:

Scalp: When reflected there was an area of bruising, 6 x 3 cm, in the left temporalis muscle and another area of bruising, 3 x 1 cm, over the right parietal region on its undersurface.

Skull: Of normal thickness and density, varying between 3 and 10 mm. In the relatively thin frontal bone on the left side there was a fissured fracture, 7 cm long, which extended downwards and medially into the roof of the left orbit overlying which was a little extradural haemorrhage.

Brain: 1,548 gm. It seemed rather bulky with flattening of the convolutions and grooving of the cerebellar tonsils. The meninges

appeared congested but translucent although the cerebro-spinal fluid appeared a little cloudy.

Mouth: There was no bruising. It contained natural teeth in fair condition in each jaw.

Tongue and Pharynx: Normal.

NECK AND CHEST:

Hyoid Bone and Laryngeal Cartilages: Intact.

Thyroid Gland: Normal.

Pericardial Sac: Normal.

Heart: 367 gm. Of normal size. There were moderate numbers of congestive haemorrhages on its surface.

Pulmonary Trunk and Valves: Normal.

Coronary Arteries: Healthy.

Atria: Normal.

Left Ventricle: 15 mm thick. On section normal.

Right Ventricle: 3 mm thick. Normal.

Aorta: Healthy.

Pleural Cavities: Normal.

Larynx: The introitus was slightly oedematous. There was a little submucosal haemorrhage below the vocal folds.

Trachea and Main Bronchi: Contained a little frothy fluid.

Lungs: The left weighed 567 gm and the right lung 813 gm. They were deep purple in colour with a heavy jelly-like texture. Section revealed a dark congested oedematous tissue.

Oesophagus: Normal.

ABDOMEN:

Abdominal Cavity: There was a little bruising in the muscles of the anterior abdominal wall on the right side of the front.

Stomach: Normal. It contained some bile-stained fluid.

Intestines: Externally appeared normal.

Duodenum, Appendix, Rectum: Normal.

Liver: 1,479 gm. On section normal.

Gall Bladder: Normal.

Spleen: 227 gm. It had a soft mushy texture.

Pancreas, Adrenal Glands: Normal.

Kidneys: Normal.

Bladder: Contained some turbid urine. The mucosa was haemorrhagic.

Prostate: Normal.

RIBS, SPINE AND PELVIS: Intact.

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The autopsy was concluded at 4.10 pm. I then handed to Scenes of Crime Officer Ashe:

- 1 Sample of head hair.
- 2 Sample of blood from the body.
- 3 Fingernail clippings.

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**BRAIN - EXAMINATION AFTER FIXATION:**

The fixed brain weighed 1,588 gm. On external examination there was no subdural or subarachnoid haemorrhage and there was no meningitis. No surface contusions were seen. There was no asymmetrical swelling and no evidence of uncal or tonsillar herniation or necrosis. The vessels of the Circle of Willis showed no evidence of atheromatous

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degeneration or aneurysm formation.

On coronal sectioning there was no cortical atrophy. Focal haemorrhages were present within the deep white matter of both frontal lobes in a parasagittal location. They were also present in the left thalamus and internal capsule. In addition there was diffuse vascular congestion throughout the white matter. No focal haemorrhage was present in the corpus callosum although it appeared congested. There was no evidence of midline shift or internal herniation but there was a mild degree of ventricular compression. There was no caudal descent of the mamillary bodies.

On sectioning the brainstem there was diffuse punctate haemorrhage. The cerebellum showed no macroscopic abnormality.

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#### MICROSCOPY

Left Ventricle: The muscle fibres were of good size. There was no recent necrosis or fibrosis.

Lungs: Five representative sections were examined. There was widespread oedema and in several of the sections foci of intra-alveolar haemorrhage. In one section the haemorrhage was widespread with dissolution of the alveolar walls, possibly due to aspiration. No pneumonia was seen.

Liver: There was no necrosis.

Kidneys: Seemed normal. No casts were identified within the tubules.

BRAIN: Sections were taken from the right and left frontal lobes, the

corpus callosum, both hippocampi, the hypothalamus, cerebellum, midbrain and pons:

**Frontal Lobes:** Examination of the sections from the right and left frontal lobes showed the presence of white matter contusions. This was associated with tissue necrosis and a macrophage reaction.

Surrounding this was extensive diffuse axonal damage. There was no evidence of hypoxic/ischaemic necrosis of the cortex. There was no meningo-encephalitis.

**Corpus Callosum:** Examination showed diffuse axonal damage.

**Left Internal Capsule:** Examination showed extensive diffuse axonal damage.

**Hypothalamus:** Examination showed no evidence of haemorrhagic necrosis. There was however axonal damage in the hypothalamic region.

**Midbrain:** Examination showed diffuse axonal damage. There was no secondary brainstem haemorrhage. The substantia nigra showed no evidence of degenerative change.

**Pons:** Examination showed the features of severe diffuse axonal damage.

**Cerebellum:** Examination showed no evidence of cortical necrosis. The Purkinje cells were preserved. A small gliotic scar was present in the white matter.

Immunohistochemistry for neurofilament protein and for the myelin stain LFB/H & E confirmed the distribution and severity of the diffuse axonal damage.

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REPORT OF BACTERIOLOGY LABORATORY:

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Culture of a lung swab isolated staphylococcus and a few coliforms.  
Culture of a sample of cerebrospinal fluid isolated Pseudomonas and  
Enterococcus

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COMMENTARY:

This young man died in hospital eleven days after he had been assaulted.

Death was as a result of the head injuries which he had sustained. Externally his injuries appeared trivial; there was a small area of abrasion on the left side of the forehead, a bruise on the upper eyelid of the left eye and a small spot of abrasion close to the left nostril. Even internally the injuries did not seem particularly severe with only two areas of bruising on each side of the undersurface of the scalp and a small almost hairline fracture in the front part of the skull running into the roof of the left eye socket. Detailed examination of the brain however and in particular its microscopic examination revealed widespread damage within its substance of a type known as diffuse axonal injury. This condition, most frequently encountered in acceleration/deceleration injury as a result of road traffic accidents is also well recognised as occurring as the result of repeated blows to the head such as by punching or kicking and this would seem the most likely mechanism of injury in this case. It was ultimately the effects of the brain injury which were eventually responsible for his death in hospital.

He had also sustained some other injuries although none of these were serious enough to have played any part in his death. There was a fading bruise on the front of the abdomen and some further bruising in the muscles of the abdominal wall which could have been due to blows during the assault. There were numerous bruises on the left upper limb, particularly on the forearm and hand which could have been sustained if the arm was struck whilst raised in a defensive gesture. A few further bruises were located on the right upper limb but some of these were probably related to injections given whilst in hospital. A fairly large area of bruising overlying the right side of the pelvis was due to blunt force and might have been caused by a kick.

The autopsy also revealed some changes in the lungs caused in part probably by a period of assisted ventilation and also by the terminal aspiration of stomach contents but these findings are unlikely to have contributed to or accelerated death.

In view of the lapse of time between the assault and his death, an analysis for the presence of alcohol was not carried out following the autopsy. On his initial admission to hospital however an analysis carried out at that time revealed an alcohol concentration of 221 mg per 100 ml. Such a level would leave no doubt that he was moderately intoxicated at the time of the incident. Also it is well recognised that alcohol intoxication exacerbates the effects of head injuries and may well have played a part in the fatal outcome in this case.

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Jack Crane

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