



VICTORIAN INSTITUTE OF FORENSIC MEDICINE

THIS DOCUMENT DETAILS THE NATURE AND RESULTS OF THE MEDICAL INVESTIGATION INTO THE DEATH OF

SAMANTHA RAYE CASE NO. A00043/23

My name is Linda Elizabeth ILES and my professional address is the Victorian Institute of Forensic Medicine, 65 Kavanagh Street, Southbank, Victoria 3006.

I am a registered medical practitioner practising as a specialist in forensic pathology.

My qualifications are Bachelor of Medicine (MB), Bachelor of Medical Science (B Med Sci) and Bachelor of Surgery (BS) with Honours, from the University of Tasmania. I am a Fellow of the Royal College of Pathologists of Australasia by examination in anatomical pathology. I hold the Diploma in Medical Jurisprudence in Pathology from the Society of Apothecaries of London (DMJ (Path)), and am a founding fellow of the Faculty of Post Mortem Imaging of the Royal College of Pathologists of Australasia.

I am employed as a Forensic Pathologist at the Victorian Institute of Forensic Medicine and am an Adjunct Associate Professor in the Department of Forensic Medicine at Monash University.

My practical experience in Forensic Pathology commenced in 2000. I commenced full time professional forensic pathology practice in Victoria in 2005. I was subsequently employed as a Consultant Forensic Pathologist in the Section of Forensic Medicine and Science at the University of Glasgow from March 2007 until January 2009 and received specialised training in Forensic Neuropathology at the University of Edinburgh. I resumed practicing forensic pathology in Victoria in July 2009.

I am head of Forensic Pathology Services at the Victorian Institute of Forensic Medicine and co-ordinate the Institute's neuropathology service.

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OPINION REPORT

Case No. A00043/23
Re : RAYE deceased

I have been requested by Ms Caitlin Healey-Nash, senior solicitor assisting the Special Commission of Inquiry into LGBTIQ hate crimes, to review materials related to the death of Ms SAMANTHA RAYE (date of birth 22 January 1958).

MATERIALS PROVIDED

- P79A Report of Death to Coroner
- Handwritten autopsy notes
- Microscopic examination of brain
- Toxicology report
- Post-mortem report of Dr Peter Bradhurst
- Coroners Court – Action Cover Sheet
- Death certificate
- Letters from Dr Helen Borman and Dr Peter Joseph Steinheuer to the Housing Commission
- Statement of Wayne Hurrell
- Statement of Daniel Willis
- Statement of Cliff Connors
- Statement of Dr Peter Joseph Steinheuer
- Statement of Dr Edward Grieve
- Scene attendance entry by Scientific Team
- Statement of Constable William John Wilcher (officer in charge)
- Statement of Constable Patrick John Duncombe
- Crime Scene Photographs
- Post-mortem photographs
- Expert report of Professor John Carter 19 January 2023

SYNOPSIS OF MATERIALS

1. The body of Samantha Raye was found by a member of the public at about 9:30 am on 20 March 1989 on a rock ledge at South Head, near Hornby Lighthouse.

2. Ms Raye was found lying on her back, fully clothed. A small folding knife and whistle were in the pocket of her jacket. After undoing the spray jacket, Ms Raye's black shirt was observed to be unbuttoned with her breasts exposed. Her belt was only loosely thread through the buckle, and fly half done up. A wristwatch was present about her right wrist and a long chain also wrapped around the right wrist. On rolling her body, a package containing four Valium tablets (5 mg) was identified. Two tablets were missing.
3. Officer-in-charge Constable Wilcher indicated that a plastic bottle (similar to a film case) containing a white substance was identified next to her body. A large syringe and needle were found underneath a rock shelf 1.5 metres away from her body, an empty syringe packet and an empty lance packet was found 1.5 metres away lying in some water filled rock pools. A Mixtard packet was found 5 metres from her body. A condom was found nearby.
4. Some days earlier, a friend of the deceased located a note at the deceased's home indicating that she was going to the lighthouse.
5. The police searched Ms Raye's residence and identified a number of syringes identical to those found near her body at Hornby Lighthouse. No insulin was found at her flat.
6. Ms Raye was an intersex person who had previously undergone gender affirming surgery and was taking feminising hormones. Ms Raye is variably reported to have suffered from anxiety neurosis, depression, adjustment disorder and mild asthma. Despite Ms Raye's friends believing that she suffered from diabetes, there are no medical records to indicate Ms Raye was an insulin dependent diabetic.
7. Ms Raye was last seen alive by a friend on 5 March 1989. She last spoke to a friend on the phone on the evening of 11 March 1989.

Autopsy

8. An autopsy was conducted by Dr Peter Bradhurst at 7:00 PM on the 22nd of March 1989.

The body was described as being that of a 177cm tall "thinly built young middle-aged adult male to female transsexual" weighing 60 kg.

9. Signs of decomposition/postmortem change

- Rigor mortis was present in the knees and elbows but subsiding
- Eyes had a sunken appearance (author suggests dehydration)
- Early black green discoloration of the right side of the abdomen
- Reddish patches of blistering on each leg, medial aspect left knee, left side of the back just below the left shoulder blade, upper left lateral thigh, right side of the scalp above the right ear (said to be in keeping with areas of postmortem pressure).

10. External injuries

No significant injuries or signs of violence, particularly no evidence of scalp bruising, intracranial haemorrhage, bruising to the skin or soft tissues about the neck, no evidence of laryngeal skeletal injury. There is a reasonably detailed description of the deceased's external genitalia; no anogenital injury is described.

11. Relevant internal examination findings

- Yellowish mucopurulent material within the main bronchi
- Heavier than normal lungs
- Cut surfaces of the lungs expressing purulent material from small bronchi
- Congestive changes within the lungs
- Undifferentiated internal genitalia
- Small amount of brownish fluid in the stomach
- No cardiac abnormalities
- No qualitative or quantitative description of bladder contents
- No macroscopic brain abnormality

12. Histology

- Acute bronchopneumonia affecting both lungs; florid changes in the left lung almost appearing as lobar pneumonia. Changes in right lung left marked resembling acute bronchopneumonia. Gram positive cocci identified on Gram stain; no fungal elements on PAS.
- A few round cells and occasional neutrophils in the leptomeninges about the brainstem, left frontal lobe, right cerebellar hemisphere, lentiform nucleus.
- Ischaemic changes in the pyramidal cells of the right hippocampus.

13. Toxicology

Blood (preserved): no alcohol; glucose 0.5 mmol per litre

Blood (unpreserved): insulin 21 microU per ml

Urine: glucose 0.9 mmol per litre

Liver: Routine screen for poisons negative.

Stomach: Routine screening tests for poisons negative.

2ml plastic syringe containing a drop of clear liquid was found to contain insulin

Unlabelled plastic jar containing white creamy paste like liquid was found to contain insulin.

14. Cause of death was given as:

- 1a. Acute bilateral bronchopneumonia and viral meningoencephalitis
- 1b. Possible use of insulin
2. Transexual, depression

15. Scene photographs

A series of black and white scene photographs depict a cave-like area surrounded by rocks. Ms Raye's body is seen fully clothed lying on her back. She is wearing shoes in the initial photo set. Discoloration is noted about her left scapular region. Various objects said to be a Valium blister packet, empty Mixtard insulin box, empty lance packet, empty syringe and other property are demonstrated, however photographs of poor quality and these items are difficult to discern

16. Autopsy photographs

A series of coloured autopsy photographs demonstrate a thin adult without signs of marked decompositional postmortem change. An area likely representing postmortem pressure parchmentisation of skin is present about the left scapula. There is a red mark on the back of her left hand; it is unclear if this is a bruise. It is unclear whether she is wearing underwear in the autopsy photographs (not otherwise described elsewhere). Whilst photos are not detailed, no significant injuries are evident.

QUESTIONS AND REPOSES

- Q1. *The adequacy of the postmortem investigations conducted with respect to Ms Raye*

Autopsy practise has evolved considerably since the time of Ms Raye's death. Nevertheless, for the purposes of review, I make the following comments:

- i. Given that Ms Raye was found with her black shirt under her jacket unbuttoned with her breasts exposed, her pants undone with belt loosely threaded through the buckle and fly half done up, a specific comment regarding the presence or absence of anogenital or breast injuries would have been prudent. It is unclear whether the pathologist was aware that Ms Raye was found in this state. Swabbing of her anogenital region for semen would have been prudent.

Given that Ms Raye was found in proximity to a syringe and a Mixtard packet, a comment regarding the presence or absence of injection sites would be desirable.

There is no comment regarding the presence or absence of petechial haemorrhages about the eyes and mouth, which is standard in contemporary practice and relevant observations when considering the possibility of neck compression. If a pathologist was aware that she had been found with her clothes in the manner that they were, it is reasonable to expect these observations to be documented. There is no comment about the presence or absence of injury to the oral mucosa, or the state of the deceased's dentition (injured or otherwise).

The above comments notwithstanding, the autopsy examination appears to exclude significant injury contributing to Ms Raye's death.

- ii. Toxicological studies include an assay of blood glucose. This is now considered an inappropriate matrix for glucose assay after death. Postmortem glucose levels are most commonly assayed on vitreous humor. Glucose levels in blood and vitreous humour fall rapidly after death, thus postmortem glucose concentrations, whether in blood or vitreous humour, cannot be used to assert the presence of hypoglycaemia. Due to the rapid fall of glucose in these matrices, an **elevated** concentration of glucose may be informative with regards to cause of death, however the converse does not apply. Thus the presence of a small concentration of glucose in Ms Raye's blood does not indicate that she was hypoglycaemic immediately prior to death.
- iii. The insulin concentration in blood has been measured. However, the time period between Ms Raye's death, sampling of her blood after death, an analysis of that sample, is unclear, and is likely to be prolonged. Insulin is unstable in blood after death, and its concentration can decrease rapidly with increasing postmortem

interval. Unless a blood specimen is obtained rapidly after death (within a small number of hours), insulin and other compounds such as proinsulin and C peptide¹ that may be informative in deaths related to insulin use, have a propensity to degrade rapidly and assays will be uninformative. It is unlikely that this was well understood at the time Ms Raye's autopsy was conducted.

- iv. Whilst toxicological analysis of blood, stomach contents and urine has been undertaken, it is unclear from the material available whether toxicological analysis for other substances (i.e., other than alcohol and insulin) has been undertaken. On this basis I cannot exclude the contribution of other substances contributing to Ms Raye's death.

Please note review of histological sections taken at autopsy is pending.

Q2. Your view as to the estimated time of Ms Raye's death. Without limiting the matters which you may consider relevant to this question, please outline:

- a. Whether you agree with the estimated time of death expressed in the original autopsy report. Why/why not?*
- b. Whether you agree with the estimated time of death recorded on Ms Raye's death certificate. Why/why not?*
- c. What factors relevant to Ms Raye's death impact upon the precision with which time of death can be estimated?*

Ms Raye was last seen alive by a friend on 5 March 1989. She last spoke to a friend on the phone on the evening of 11 March 1989. After that she did not attend appointments as expected. Ms Raye's body was found on 20 March 1989. Following autopsy Dr Bradhurst estimated death had taken place approximately 2-3 days prior to autopsy (i.e., prior to 22 March 1989). Samantha's original death certificate gave a date of death as 20 March 1989. This was subsequently amended to on or about 12 March 1989.

Based on the data in the autopsy report, it is not possible to be more specific about the time of Ms Raye's death beyond what is suggested by the circumstances as described. The autopsy report does not describe marked decompositional change or postmortem insect activity or animal predation. Rigor mortis is described as present but receding. The presence and extent of decompositional change, and the state of rigor mortis, depend significantly on environmental variables such as ambient temperature, whether

an environment is wet or dry, the presence of postmortem predators, local insect population, the presence of injury to the body, body habitus, underlying disease processes etc. There is no documentation of the prevailing environmental conditions at the location where Ms Raye was found. It is possible that the cave/rock-ledge where Ms Raye was found was sheltered from the elements, cooler, and sheltered from postmortem predation. This type of local "micro-climate" may significantly slow down decompositional process.

The estimation of time of death as per the original autopsy report, is not unreasonable based on the postmortem observations recorded (noting the inability to be precise around time of death based on these observations). However, this does not preclude the time of death being a number of days prior, i.e. these findings do not preclude Ms Raye's death being closer to the last time she was known to be alive i.e. 12 March 1989.

Q3. *Your view as to the medical cause of Ms Raye's death (including, if relevant, any reasons for taking a different view to that formed by Dr Bradhurst and/or Professor Carter). Without limiting the matters which you may consider relevant to this question, please address:*

- a. *Ms Raye's "acute bilateral bronchopneumonia" and whether you consider this infection to have directly caused Ms Raye's death, either alone or in conjunction with another factor;*
- b. *Ms Raye's "mild meningoencephalitis" and whether you consider this infection to have directly caused Ms Raye's death, either alone or in conjunction with another factor; and*
- c. *Whether you consider there to be a basis for the recording of "transsexual" and/or "depression" as other significant conditions contributing to Ms Raye's death.*

Based on the material available to me at this present time, noting that histological review of histological samples taken at autopsy is yet to be undertaken, it appears likely that Ms Raye has died as a consequence of bilateral bronchopneumonia. However the development of bronchopneumonia in an otherwise healthy individual requires explanation. Bronchopneumonia in an otherwise healthy adult suggests a period of central nervous system depression/obtundation prior to death. This may be due to intoxication with central nervous system depressing agents, or in this instance, could

theoretically be consequent to insulin induced hypoglycaemia. There is however no way of confirming this mechanism based on the investigations undertaken.

At this point in time, I am unable to comment on mild meningoencephalitis with regards to extent and its likely contribution to Ms Raye's death. Review of histological samples is pending.

There is no biological or pathological evidence to justify the inclusion of "transsexual" on Ms Raye's death certificate, i.e. there is no physiological link between Ms Raye's intersex biology, gender affirming surgery or hormonal therapy and her death. Likewise, depression cannot be assessed by a pathologist at autopsy. This is not a pathological finding that can be supported by physical evidence. Whilst a coroner might have a view as to the circumstances surrounding her death, this is not something that can be concluded by a pathologist. It is incorrect for a pathologist to include these elements on a medical certificate of cause of death.

Q4. Your view as to any conclusions that can be drawn from the toxicological analysis (including any reasons for taking a different view to that formed by Dr Bradhurst and/or Professor Carter).

For all intents and purposes, I agree with the conclusions of Professor Carter. As above, an absent or negligible concentration of glucose in blood after death is an expected postmortem finding in most non-diabetic individuals. Insulin concentrations deteriorate rapidly in blood following death due to its instability postmortem, and the concentration of insulin demonstrated in this case is of little utility.

Circumstantial evidence suggests that Ms Raye was not diabetic and was not prescribed insulin. In this setting, demonstrating the presence of **exogeneous** insulin in blood is a strong indicator that this has contributed to death. However, given that no C peptide (a peptide cleaved from proinsulin, the insulin precursor molecule of endogenous insulin) assay is available, it cannot be determined whether the insulin detected in Ms Raye's blood is due to her own natural insulin production, or the presence of injected insulin.

The inference that Ms Raye may have died as a consequence of acute bronchopneumonia following hypoglycemia due to the injection of exogeneous insulin, can only be made on circumstantial rather than pathological evidence. There is circumstantial evidence in the form of the presence of insulin in containers located

adjacent to Ms Raye's body. The strength and weighting given to that evidence is for others to determine.

Q5. *Your view as to whether the circumstances of Ms Raye's death and/or her injuries were consistent with misadventure, suicide or foul play.*

There is no documented postmortem evidence to suggest that physical injury has contributed to Ms Raye's death. Whilst it appears that Ms Raye has died as a consequence of bronchopneumonia, the precipitant of her lung infection is not clear and cannot be determined on the autopsy or toxicological findings.

Although the autopsy findings are nonspecific, they do allow for the possibility that Ms Raye has injected a quantity of insulin in the setting of being non-diabetic, inducing hypoglycaemia, coma, and then death via acquired bronchopneumonia. However in this circumstance, primary causation is implied purely on circumstantial evidence rather than confirmatory toxicological findings. The finding of reported mild meningoencephalitis on neuropathological examination is difficult to reconcile with this scenario and is subject to further review. Likewise, the significance or otherwise of Ms Raye being found with her breasts exposed under her jacket, and trousers loosely undone cannot be determined as it appears to not have been given due consideration in the initial investigation.

Reference

1. Labay LM, Bitting CP, Legg KM, Logan BK. The determination of insulin overdose in postmortem investigation. *Academic Forensic Pathology*, 2016; 6 (2): 174-183.

I, Dr Linda Iles, acknowledge for the purpose of Rule 31.23 of the Uniform Civil Procedure Rules 2005 that I have read the Expert Witness Code of Conduct in Schedule 7 to the said rules and agree to be bound by it.

I hereby acknowledge that this statement is true and correct and I make it in the belief that a person making a false statement in the circumstances is liable to penalties of perjury.

A handwritten signature in cursive script, appearing to read "Linda", enclosed within a thin black rectangular border.

Assoc. Prof. Linda E. Iles
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