REPORT OF POST MORTEM EXAMINATION

ML 10-545
NAME: Adam SPRAGUE
AGE: 25
SEX: Male
CORONER: Dr.M.Moreau
PATHOLOGIST: Dr.C.Rao
AUTOPSY LOCATION: Hamilton HS – Hamilton General Hospital Site.
DATE DEATH PRONOUNCED: November 11th, 2010
DATE/TIME OF AUTOPSY: November 12th, 2010 at 9:45 a.m.
PATHOLOGIST'S ASSISTANT(S): Scott Wordock and Elizabeth Pinto
FORENSIC IDENTIFICATION OFFICERS: SIU Forensic Investigators Les Noble and Paul Dempsey, OPP Det./Cst. P.L. Marcellus, Identification Section, Huronia West Detachment.

CAUSE OF DEATH: Acute oxycodone toxicity.

QUALIFICATIONS OF Dr Chitra Rao:
MBBS (equivalent to North American MD)- University of Bihar, India, 1966.
ECFMG Certification, 1972
FRCP(C) Fellow, Royal College of Physicians and Surgeons of Canada (General Pathology), 1978.
L.M.C.C. (Licentiate Medical Council of Canada,) 1980.

I work as a full time Forensic Pathologist at the Regional Forensic Pathology Unit located at Hamilton General Hospital and I am an Associate Professor, Faculty of Medicine at McMaster University. I was the Medical Director of the Regional Forensic Pathology Unit for seventeen years, the position which I relinquished in March, 2010. I am registered with OFPS under category A. I have performed well over 7,000 hospital and medical legal autopsies including 350 homicides and equal number of suspicious cases. I have given evidence in court at all levels in Ontario and have given evidence in child abuse cases for the Province of Nova Scotia. I have reviewed cases for prosecution as well as defense council. I have regular teaching assignments to medical undergraduate and postgraduate students. I am a member of various professional organizations.

DECLARATION:
This post mortem examination was performed under instruction of a Coroner's Warrant for Post Mortem Examination using the Ontario Forensic Pathology Service Practice Manual for Pathologists (2009) produced by the Office of the Chief Coroner for Ontario. I understand that my duty is to the court both in preparing reports and giving oral

evidence. I have complied with and will continue to comply with that duty. I have done my best, in preparing this report, to be accurate, and complete. I have mentioned all matters that I regard as relevant to the opinions that I have expressed.

PRE-AUTOPSY INFORMATION:

This 25 year old male was found VSA in a cell at Orangeville Police Station. He had been arrested for intoxication in public. He apparently did not resist and was co-operative at booking. Last seen moving on motion activated camera at 1:00 a.m. however, at 7:42 a.m. he was found VSA in the cell. Resuscitation was unsuccessful. There was also a past history of episode of seizure in August 2010 while being under the influence of alcohol and narcotics. There was also possible Percocet use. At the time of discovery, he was lying on the bed with his hands behind his head in the same position as when last seen moving at 1:10 a.m. Examination revealed early rigor with fixed lividity.

Further information received from the Coroner through a fax on November 15th, 2010 indicating that toxicological analysis should include acetaminophen and Trazodone. His information also indicated that there was an allegation that he stole Meloxicam and Trazodone from a friend the day before his death. The friend also had admitted to alcohol, marijuana, and Oxycontin use the night before his death. Further, it appeared the deceased had been told to stop alcohol use due to pancreatic problem.

Police information same as above.

SCENE:

Scene visit: No.
No digital images of the scene were available at the time of autopsy.

IDENTIFICATION

The body was removed from the locker #5 using the key retrieved from the safety box at 9:45 a.m. on November 12th, 2010. The body received was in a sealed grey zippered body bag bearing the seal number "S012406" previously signed by Investigator Noble on November 11th, 2010. The seal was broken at 9:50 a.m. on November 12th, 2010.

On opening the bag, the body was wrapped in two thermal blankets and a coloured sheet. On unwrapping the sheets, he was clothed in the form of khaki pants with the zipper being undone exposing the navy blue underwear. There was prior removal of his upper clothing which was found lying freely on the stretcher.

He had been positively identified by police at the scene who knew the deceased as well as through the photo on his drivers licence.

A Coroner's tag bearing the deceased's name was present around his left wrist.

SPECIAL PROCEDURES PERFORMED

Photographs were taken by the Identification officers from SIU, OPP as well as unit staff which will be secured in the departmental file and a copy will be provided to the Crown if needed

A standard external examination was performed.

Special dissections were also performed which included:

a musculoskeletal dissection of the anterior torso
a layered dry neck dissection
a layered back dissection as well as dissection of all four extremities

EXTERNAL EXAMINATION

HEIGHT: 175 cm.

WEIGHT: 89 kg.

BODY HABITUS: Well built and muscular.

SCALP & FACIAL HAIR: Scalp hair brown. The body received also had a moustache and a small growth of hair over the chin area.

EYES: Grey. There was bilateral scleral congestion. Pupils bilaterally equal and measured 4 mm. There was conjunctival congestion but no evidence of petechial haemorrhages noted over the eyelids, white of the eyes or conjunctivae.

FACE: The face appeared mottled with both ear lobules appearing mildly cyanotic. The left ear lobule appeared pierced but no earrings present at the time of autopsy. Palpating the nose, no nasal fractures identified and there was no evidence of erosion or perforation of the nasal septum.

MOUTH AND TEETH: Examination of the mouth revealed natural teeth in both jaws. The oral cavity was blood-stained and there were blood crusts noted stuck to the upper lip. However, there was no evidence of laceration or bruising of the lip mucosa and both frenulum appeared intact.

NECK: There was some blood staining noted over the left side of the neck but no injuries noted. There were creases across the neck. There was also mottling of the neck and upper chest area.

TORSO: There were some pigmented skin lesions resembling naevi but no evidence of any scarring or injury. There was some pressure blanching as well as a faint reddish marking around the chest area caused by prior application of pacer pads and ECG leads. There was prior shaving of the hair just below the umbilicus.

BREASTS: Male, unremarkable.

EXTREMITIES: A 2.5 x 0.5 cm scar was noted on the anterior aspect of the right knee. There was also a fibre pattern noted over both lower legs in keeping with prior use of ribbed socks.
The toes appeared somewhat dirty and on the dorsal aspect and base of the right second toe, there was a reddish discolouration noted which measured 0.6 x 0.5 cm.
Also noted were pigmented skin lesions resembling naevi over both lower extremities.
On the anterior aspect of the left lower leg just above the ankle there was a focal area of reddish granularity noted with this area measuring 12 x 2 cm.
Examining the left arm revealed no evidence of any old needle tracks and the nails appeared somewhat short and there was nicotine staining of the left index and middle fingers.
Naevi were also present over both arms.
A tattoo in the form of a "CANDADIAN FLAG" was present around the lateral aspect of the left upper arm.
Apart from the prior needle puncture site of the right antecubital fossa, no other evidence of recent or old needle tracks.
There were no injuries on the dorsal and palmar aspects of both hands.

EXTERNAL GENITALIA: Genitals male. Penis circumcised. Testes intrascrotum. There was no scrotal injury identified grossly.

RIGOR MORTIS: Fully established.

LIVOR MORTIS: Dorsal. There was some post mortem staining noted over the anteromedial aspect of the left thigh.

DECOMPOSITION: Nil.

CLOTHING & EFFECTS:

Khaki pants
Search of the pockets of the pants revealed no contents.

Blue underwear.

A pair of blue socks.

A white T-shirt was lying freely on the stretcher.

Similarly, a fleece jacket as well as another T-shirt which had been previously cut was lying on the stretcher near the left of the deceased.
The T-shirt at the back had an inscription indicating "THE DECK 1861 PUB AND GRILL ORANGEVILLE".
The T-shirt showed some staining by vomitus.

SIGNS OF RECENT THERAPEUTIC INTERVENTION

Orogastric tube in situ.
ECG leads and quik pace on the front of the chest.
IV in situ over the right antecubital fossa.

SIGNS OF RECENT INJURY

About 3 cm above the lateral aspect of the left iliac crest, there was an area of bruise which measured 4 x 1 cm and superimposed on the lateral aspect of this bruise, there was a 1 cm linear abrasion.

INTERNAL EXAMINATION

NECK

Neck dissection was done last after removing the thoracic and abdominal visceral organs as well as the brain..

SOFT TISSUES: Layered dissection of the neck revealed no evidence of bruising of the subcutaneous tissue or neck musculature

TONGUE: Normal in position and showed no bite marks. On sectioning, no haemorrhage within the base.

HYOID BONE: Intact. Not calcified.

LARYNX & TRACHEA: The lumen contained reddish-brown liquid content with discolouration of the mucosa which could be on the basis of terminal aspiration which will be confirmed on microscopic examination. There were no mucosal injuries. The thyroid and cricoid cartilages were intact and not calcified.

RESPIRATORY SYSTEM

DIAPHRAGM: Both domes of the diaphragm normal in position.

PLEURA & CAVITIES: There was no evidence of fluid accumulation or adhesions.

PULMONARY ARTERIES: Patent. No in situ thrombus noted.

BRONCHI & CARINA: Discolouration of the mucosa and contained some reddish-brown liquid.

LUNGS: The right lung weighed 768 grams. The left lung weighed 690 grams. There was bilateral pulmonary congestion with the cut surface appearing markedly haemorrhagic in the form of blackish discolouration. There was also free oozing of discoloured fluid.

CARDIOVASCULAR SYSTEM

MEDIASTINUM: Not widened.

PERICARDIUM & CAVITY: Intact. No fluid accumulation.

HEART (EXTERNAL): Weighed 380 grams.

CORONARY ARTERIES: Both coronary arteries took normal origin with right coronary artery dominance. Both main coronary arteries and their branches appeared free of atherosclerosis and patent.

ATRIA: Of normal size and showed normal relationship to the ventricles.

CARDIAC VALVES: Were in normal position and appeared free of disease process and they measured in circumference as follows: tricuspid valve 13 cm, mitral valve 10 cm, aortic valve 7 cm, pulmonary valve 8 cm.

VENTRICLES & SEPTUM: The right ventricle measured 0.2 cm in thickness, the left ventricle and interventricular septum each measured 1.2 cm. On serial sectioning, apart from generalized discolouration of autolysis, there were no obvious scars noted.

AORTA & MAJOR ARTERIES: Aorta was in normal position and appeared free of atherosclerosis and major branches appeared patent.

VENAE CAVAE & MAJOR VEINS: Vena cava patent.

BLOOD VOLUME: Adequate.

DIGESTIVE SYSTEM

PERITONEUM & CAVITY: No fluid accumulation.

PHARYNX & ESOPHAGUS: Generalized discolouration of mucosa and the esophageal lumen showed staining by regurgitated gastric content. The lower third segment of the esophageal mucosa appeared somewhat black in colour. Sections taken to rule out acute or chronic esophagitis.

STOMACH CONTENTS & GASTRIC WALL: Contained 50 ml of bloody liquid content but no intact or disintegrated tablets/pills identified. The gastric mucosa appeared black in colour partly indicating autolysis however, sections taken to rule out any pathology.

INTESTINES: The loops of small and large intestine appeared free of adhesion and free of serosal lesion apart from slight segmental discolouration due to autolysis. The duodenal mucosa revealed no lesion. The rest of the bowel not opened.

VERMIFORM APPENDIX: Present and appeared unremarkable.

LIVER: Weighed 3315 grams. Capsule intact. Surface smooth. Cut surface appeared mildly congested. No significant fatty change noted.

GALLBLADDER: Contained bile but no stones. Biliary tract appeared patent.

PANCREAS: Was in normal position and appeared markedly haemorrhagic in the form of black discolouration. The discolouration noted involved the tail and body of the pancreas with the head appearing relatively unremarkable. However, this discolouration was not associated with any fat necrosis. The features noted appeared mainly autolytic however, sections taken to rule out pancreatitis.

GENITOURINARY SYSTEM

KIDNEYS: The right kidney weighed 180 grams. The left kidney kidney weighed 170 grams. Both capsules could be stripped with ease revealing a smooth cortical surface. On bivalving, the cortico-medullary junctions were well demarcated. Calcyes and pelves appeared unremarkable.

URINE: 200 ml. Appeared clear.

URINARY BLADDER: No mucosal lesion.

PROSTATE GLAND: Was in normal position and showed no undue nodularity.

TESTES: Intrascrotum. On removing the testes, there was no evidence of injury or any abnormality.

HEMO-LYMPHATIC SYSTEM

THYMUS: 42 grams. Appeared mainly fatty.

SPLEEN: Weighed 286 grams and appeared congested.

LYMPH NODES: None palpable.

BONE MARROW: Sampled and retained in a stock jar.

MUSCULOSKELETAL SYSTEM

RETROPERITONEUM: Unremarkable.

BONES: No bony fractures identified.

SKELETAL MUSCLES: Unremarkable.

ENDOCRINE SYSTEM

PITUITARY GLAND: Not examined.

THYROID GLAND: Was in normal position and revealed no obvious nodularity.

ADRENAL GLANDS: There was no evidence of adenoma or hyperplasia.

HEAD AND CENTRAL NERVOUS SYSTEM

SCALP: On reflecting the scalp, there was a focal area of mild bruising noted over the left parieto-occipital region of its undersurface. Apart from this, there were no other lesions noted.

SKULL & SINUSES: Skull intact. No evidence of fracture.

BRAIN (WEIGHT): Weighed 1,425 grams.

DURA & SUBDURAL SPACE: Dura intact, not thickened. Subdural space contained no haemorrhage.

ARACHNOID: No haemorrhage.

CEREBRAL ARTERIES: Appeared free of atherosclerosis and free of vascular anomaly.

BRAIN (EXTERNAL): Both cerebral hemispheres appeared symmetrical with no evidence of surface contusion. There was no evidence of edema or herniation. The general topography was well maintained.

BRAIN (INTERNAL): On serial sectioning the cut slices of the brain revealed no evidence of any intrinsic disease process. There was also no evidence of parenchymal haemorrhage. There was no evidence of temporomesial sclerosis. The ventricles appeared patent. Similarly, sectioning through the cerebellum, pons, medulla no lesion noted.

SPINAL CORD: Not dissected.

The following samples were retrieved from the body and handed over to SIU Identification Officer Les Noble.

All the clothing
Left nasal swab 2N00569
Right nasal swab 2N00570
Tube of heart blood with preservative 2N00565
Two tubes of femoral blood with preservative 2N00566 and 2N00567.
A tube of urine with preservative 2N00568

OTHER SPECIAL PROCEDURES PERFORMED

Vitreous humor was retrieved and will be analyzed at the hospital laboratory.
Blood spots obtained and will be retained in the departmental file.
Stat blood analysis was done at the hospital laboratory for ethanol.

MICROSCOPIC EXAMINATION

Small samples of tissue are retained in 10% formalin and representative sections were submitted for microscopy. No whole organs were retained.

Heart: Sections of both ventricles revealed generalized parenchymal congestion. Section of the right ventricle also included a cross section of epicardial coronary artery showing focal, mild atherosclerosis. There was mild myocyte hypertrophy. One of the sections labelled "11" revealed a single focus of sparse mononuclear cellular infiltration of the interstitium not associated with any myonecrosis with the finding appearing to be non-specific. Apart from focal sparse mononuclear cellular infiltration of the epicardial adipose tissue, none of the sections examined revealed any evidence of widespread myocarditis or myocardial scarring. There were patchy areas of minimal perivascular scarring.

Lungs: Sections revealed areas of mild to moderate pulmonary edema with congestion as well as areas of mild intra alveolar haemorrhage in a background of autolysis. Smoker's pigment deposition was also noted. Some of the sections revealed areas of acute alveolar distention as well as sparse perivascular mononuclear cellular infiltration of the interstitium. There was also evidence of agonal aspiration. None of the sections examined revealed any evidence of pneumonia.

Liver: Sections revealed sinusoidal congestion with areas of mild fatty change. There was no evidence of hepatitis or cirrhosis.

Kidneys: Sections revealed mild to moderate autolytic changes. However, there was no evidence of glomerulo or vasculopathy. One of the sections labelled "7" revealed a focal area of mild mononuclear cellular infiltration of the pelvic submucosa. Apart from this, sections of both kidneys revealed no other evidence of any interstitial inflammation.

Pancreas (3 slides): Sections taken from the tail and body of the pancreas revealed marked autolytic changes which precludes a proper histopathological evaluation. However, sections revealed areas of mild interstitial haemorrhage. Apart from presence of occasional neutrophils within the parenchyma along with some of the parenchymal vessels being sludged with neutrophils, all the sections revealed no evidence of any significant acinar necrosis or fat necrosis. There was also no stromal fibrosis. The overall findings were not indicative of full blown acute haemorrhagic pancreatitis or chronic pancreatitis.

Stomach including esophageal gastric junction: Sections revealed generalized autolytic changes. However, there was moderate mucosal and submucosal congestion with the section of the esophageal gastric junction showing usual mild mononuclear cellular infiltration of the submucosa amidst which occasional eosinophils were noted. There was no evidence of mucosal ulceration or significant acute or chronic gastritis.

Brain: Sections revealed generalized parenchymal congestion. There was no evidence of trauma, infection or any other significant pathology.

SUMMARY

History indicated that this 25 year old male was in custody due to public disturbance while being under the influence of alcohol. He apparently did not resist arrest and was co-operative. He was last seen alive at 1:00 a.m. however, at 7:42 a.m. on November 11th, 2010 was found VSA.

A detailed post mortem examination revealed no evidence of any trauma apart from focal bruising of the left lateral hip region. Post mortem examination also revealed no evidence of any significant pre-existing disease process to cause or accelerate his death or cause his sudden collapse.

Analysis of the vitreous humor done at the hospital laboratory revealed no significant findings. Analysis of the blood done at the hospital laboratory revealed 11 mmol/L of ethanol.

The toxicological report of the Centre of Forensic Sciences revealed 0.15 mg/L of Oxycodone in his sample of femoral blood taken at the time of autopsy. The report commented that the concentration of Oxycodone detected was greater than expected with therapeutic administration of this drug and could cause death. However, the report also cautioned that the toxicity of Oxycodone was dependent upon an individual's tolerance and the route of administration. Please refer to the report for their further comments. Further analysis of the blood revealed therapeutic ranges of Diazepam and its major metabolites Nordiazepam, Temazepam, Oxazepam, as well as Trazodone and Acetaminophen. Analysis of the urine revealed 106 mg/100 mL of ethyl alcohol which indicated a blood alcohol concentration of 81 mg/100 mL sometime prior to death. The report indicated that the addition of Diazepam, Nordiazepam, Temazepam, Oxazepam, Trazodone and ethyl alcohol would enhance the central nervous system depression produced by Oxycodone thereby increasing its toxicity.

In the absence of any pre-existing disease process as well as trauma, the cause of death in this 25 year old male could be attributed to acute Oxycodone toxicity.

CAUSE OF DEATH

Acting on the authority of a Coroner's Warrant for Postmortem Examination I hereby certify that I have examined this body, opened and examined the cavities, organs, and tissues as indicated, and based on my findings and information made available to me, in my opinion the cause of death was:

I. a) Acute Oxycodone toxicity.

February 11th, 2011

Dr.C. Rao, FRCP(C)
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CR/mb

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REGIONAL SUPERVISING CORONER
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