

**DAMIEN ALVARADO**

20-0901

AUTOPSY REPORT

PIMA COUNTY, ARIZONA

TUCSON POLICE DEPARTMENT

CASE # 2003220124

MARCH 24, 2020

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**FINAL FINDINGS:**

- I. Sudden cardiac arrest in the setting of acute methamphetamine intoxication and restraint
  - A. Postmortem toxicologic analysis of cavity blood is positive for methamphetamine, cannabinoids, naloxone, caffeine, and cotinine; see Axis Forensic Toxicology Report
  - B. Reported aggressive behavior and shouting prior to death
  - C. Reported restraint prior to death
  
- II. Blunt force injuries
  - A. Abrasions of head
  - B. Subscalp hemorrhage
  - C. Bilateral temporalis muscle hemorrhages
  - D. Hemorrhages of oral mucosa
  - E. Abrasions and contusion of torso
  - F. Soft tissue hemorrhages of lower back
  - G. Abrasions and contusions of upper and lower extremities
  
- III. Dilated cardiomyopathy (420 grams) of undetermined etiology
  
- IV. Therapeutic intervention
  - A. Hemothoraces
  - B. Status post thoracotomy

**OPINION:**

In consideration of the known circumstances surrounding this death, the available medical history, and the examination of the remains, the cause of death is ascribed to sudden cardiac arrest in the setting of acute methamphetamine intoxication and restraint with dilated cardiomyopathy as a significant contributing condition.

The manner of death is accident.

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**DATE OF DEATH:** March 22, 2020      **TIME OF DEATH:** 1830 Hours

**DATE OF AUTOPSY:** March 24, 2020      **TIME OF AUTOPSY:** 1310 Hours

**PLACE OF AUTOPSY:** Pima County Office of the Medical Examiner  
2825 E District Street  
Tucson, Arizona 85714

**PERFORMED BY:** Ashley L. Lukefahr, M.D.  
Forensic Pathology Fellow

**WITNESSED BY:** Jennifer G. Chen, M.D.  
Forensic Pathologist

Kayla Hare, Louie Goad, Jeremy Cox  
Forensic Autopsy Technicians

Detective Simmons, Crime Scene Technician Wang  
Tucson Police Department

### **HISTORY**

This 29-year-old man reportedly became unresponsive during an altercation with law enforcement, following a motor vehicle collision. He was transported to a hospital where he died despite resuscitative efforts.

His past medical history is significant for a heart murmur and methamphetamine use.

### **PHOTOGRAPHS**

Photographs are taken during the autopsy by Ashley L. Lukefahr, M.D., Forensic Pathology Fellow, and by Crime Scene Technician Wang, Tucson Police Department.

### **IDENTIFICATION**

The body is identified by Tucson Police Department investigators.

### **CLOTHING**

The body is received dressed in:

1. A purple plaid short-sleeve shirt (cut)

### **EVIDENCE OF MEDICAL INTERVENTION**

1. An endotracheal tube inserted in the mouth and secured around the head with a strap
2. Seven EKG electrodes on the anterior chest and abdomen

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3. Four defibrillator pads on the anterior chest
4. A chest tube inserted in the lateral right chest, through a 4.2 cm long incision, with associated incision through the soft tissues at approximately the level of the 6<sup>th</sup> intercostal space
5. A 25.5 cm sutured incision of the lateral left chest, with associated incision through the soft tissues at approximately the level of the 4<sup>th</sup> intercostal space
6. An intravascular catheter in the left antecubital fossa
7. A hospital identification bracelet around the left wrist
8. An intraosseous line in the anterior left leg

### **EXTERNAL EXAMINATION**

The body is received in the supine position within a white body bag with intact seal numbered 12682. The body is that of a well-developed, well-nourished (body mass index of 25.72 kg/m<sup>2</sup>), adult, light-skinned male who weighs 195 pounds, is 73 inches in length, and appears compatible with the reported age of 29 years. The body is cold. Rigor mortis is fully fixed in the muscles of the jaw and extremities. Fixed pink livor mortis extends over the posterior surfaces of the body, except in areas exposed to pressure.

The head is normocephalic. The scalp hair is brown, straight and approximately 1.1 cm in length over the crown. The irides appear brown. The corneas are translucent. The sclerae and the conjunctivae are clear with red drying artifact. No petechial hemorrhages are identified on the sclerae or conjunctivae. The nose is normally formed and the septum is in the midline. The anterior teeth are natural and in good condition. No petechial hemorrhages are on the oral mucosa. The ears are unremarkable. The decedent wears a brown mustache and beard. The neck organs are in the normal midline position and appear unremarkable.

The thorax is well-developed and symmetrical. The abdomen is flat. The external genitalia are those of a normal adult male. The anus is free of lesions.

The upper extremities are well-developed and symmetrical without absence of digits. The hands have short, clean, regularly trimmed fingernails. Black ink is on the palmar aspects of the digits of the hands. The lower extremities are well-developed and symmetrical without absence of digits. The spine is normally formed.

### **IDENTIFYING MARKS, SCARS AND TATTOOS**

1. A 4.3 cm linear hypopigmented scar of the left occipital scalp
2. A 1.2 x 0.4 cm oval hypopigmented scar of the dorsal right hand
3. A 7 x 1.2 cm irregular hypopigmented scar of the anterior left knee
4. A 1.6 x 1 cm hyperpigmented scar of the medial left leg

**EVIDENCE OF INJURY**

I. Blunt Force Injuries:

- A. Head: Scattered red abrasions of the right side of the forehead cover a 5.8 x 2.7 cm area. Scattered red abrasions of the right cheek cover an 8.5 x 4.7 cm area. Scattered red abrasions of the right jaw cover a 10 x 3.5 cm area. Scattered red abrasions of the midline forehead cover a 6.3 x 6.1 cm area. Scattered red abrasions of the left side of the forehead and left cheek cover a 10.4 x 4 cm area. A 0.7 x 0.3 cm red abrasion is on the left side of the nose. Scattered mucosal hemorrhages are on the upper and lower lips. Reflection of the scalp shows a 4 x 3 cm area of subscalp hemorrhage on the right occipital scalp and bilateral temporalis muscle hemorrhages.
  
- B. Torso: Scattered red abrasions of the right chest and abdomen cover a 24.5 x 15.3 cm area. A 1.7 x 1 cm red abrasion is on the right lower quadrant of the abdomen. A 2.3 x 1 cm red abrasion is on the upper left chest. Scattered red abrasions of the left upper quadrant of the abdomen cover a 21.7 x 9.3 cm area. A 1.6 x 1.1 cm red abrasion is on the left flank. A 2.2 x 0.4 cm red-yellow abrasion is on the left flank. A 1.7 x 1.1 cm red contusion is on the left lower quadrant of the abdomen. A 4.7 x 1.8 cm red abrasion is on the left lower quadrant of the abdomen. Scattered red abrasions of the left lower quadrant of the abdomen cover a 13 x 4.5 cm area. Red abrasions of the anterior scrotum cover an 8.5 x 6.7 cm area. Two punctate red abrasions measuring 0.5 x 0.4 cm are spaced 7 cm apart on the lower right back. Scattered red abrasions of the right buttock cover an 8.5 x 4.3 cm area. A 6.2 cm linear red abrasion is on the upper left back. A 9.5 cm linear red abrasion is on the left side of the back. A 3.5 cm linear red abrasion is on the left side of the back. A 3.2 cm linear red abrasion is on the left side of the back. Scattered red abrasions of the lower left back cover a 4.7 x 1.1 cm area. Reflection of the skin of the back shows scattered irregular soft tissue hemorrhages of the lower back ranging from 3.5 to 4.7 cm in greatest dimension.
  
- C. Upper Extremities: A 1.5 x 0.6 cm red abrasion is on the right shoulder. A 1.9 cm linear red abrasion is on the lateral right arm. A 0.6 cm linear red abrasion is on the lateral right arm. Scattered red contusions of the medial right arm cover a 12.5 x 10.5 cm area. Scattered red abrasions of the medial right elbow cover a 5.5 x 4.2 cm area. A 6.3 x 4.5 cm red contusion is on the anteromedial right forearm. Scattered red abrasions of the anterior right forearm cover a 19 x 9 cm area. Scattered red abrasions of the dorsal right forearm cover a 16 x 13.5 cm area. A near circumferential red abrasion of the right wrist is up to 5 cm in width. A 0.4 x 0.2 cm red abrasion is on the right thenar eminence. A 1 cm linear red abrasion is on the ventral aspect of digit 1 of the right hand. A 0.9 x 0.8 cm ruptured blister is

on the ventral right hand. Scattered red abrasions of the dorsal right hand cover a 0.7 x 0.2 cm area. Scattered red abrasions of the dorsal right hand cover a 0.8 x 0.1 cm area. A 0.6 cm linear red abrasion is on the dorsal aspect of digit 2 of the right hand. A 0.6 cm linear red abrasion is on the dorsal aspect of digit 3 of the right hand. A 0.5 cm linear red abrasion is on the dorsal aspect of digit 4 of the right hand. Scattered red abrasions of the ventral left forearm cover a 22 x 15 cm area. Scattered red abrasions of the dorsal left forearm cover a 6.2 x 2.9 cm area. Scattered red abrasions of the lower dorsal left forearm cover a 4 x 3 cm area. Scattered red abrasions of the dorsomedial wrist cover a 5 x 3.5 cm area. Scattered red abrasions of the dorsolateral left wrist cover a 5.5 x 4.9 cm area. A 0.6 x 0.3 cm red abrasion is on the left thenar eminence. Scattered pink abrasions of the palmar surface of the left hand cover a 3.5 x 0.5 cm area. A 0.6 x 0.4 cm red abrasion is on the palmar aspect of digit 2 of the left hand. A 0.6 cm linear red abrasion is on the palmar aspect of digit 2 of the left hand. Scattered red abrasions of the dorsal left hand cover an 8.5 x 8 cm area. A 1.1 x 0.6 cm and a 0.5 x 0.3 cm red abrasion are on the dorsal aspect of digit 2 of the left hand. A 0.7 x 0.7 cm and a 0.5 x 0.3 cm red abrasion are on the dorsal aspect of digit 3 of the left hand. A 3.5 x 0.8 cm red abrasion is on the dorsal aspect of digit 4 of the left hand. A 0.6 x 0.6 and a 0.6 x 0.3 cm red abrasion are on the dorsal aspect of digit 5 of the left hand.

- D. Lower Extremities: Scattered red abrasions of the anterior right thigh cover a 9.5 x 3.9 cm area. A 3.7 cm linear red abrasion is on the anterior right thigh. Scattered red abrasions of the lateral right thigh cover a 17 x 9 cm area. A 1.1 cm linear red abrasion is on the anterior right knee. Scattered red abrasions of the anterior right knee cover an 8.1 x 3 cm area. A 2.2 x 0.8 cm red-brown crusted abrasion is surrounded by a 2.7 x 2 cm red contusion on the anterior right leg. A 5.7 x 5.3 cm red contusion is on the anterior right leg. Scattered crusted red abrasions of the anterior right leg cover an 8.3 x 4 cm area. Scattered red abrasions of the anterior right ankle cover a 13.5 x 5 cm area. Scattered red abrasions of the medial right ankle cover a 9.6 x 3.9 cm area. Scattered red abrasions of the lateral right ankle cover a 2.6 x 2.4 cm area. Scattered dried red-brown crusted abrasions of the lateral right foot cover a 1.2 x 1 cm area. A dried crusted 4.8 x 2 cm red abrasion is on the dorsolateral right foot. Scattered red abrasions of the anterolateral left hip cover an 11 x 8.2 cm area. Scattered red abrasions of the anterior left thigh cover a 21.5 x 6 cm area. Scattered red abrasions of the dorsal left thigh cover an 8 x 3 cm area. A 1.1 x 1.3 cm red abrasion is on the dorsal left thigh. Scattered red abrasions of the anterior left knee cover a 3.2 x 2.7 cm area. A 1.7 x 0.9 cm pink abrasion is on the anterior left knee. Scattered red abrasions of the posterior left knee cover a 5.2 x 0.6 cm area. Scattered red abrasions of the anterior left leg cover a 1.6 x 0.5 cm

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area. A 4.2 x 3 cm red contusion is on the anterior left leg. A 2.9 cm linear crusted red abrasion is on the medial left leg. A 4 x 1.2 cm red contusion is on the anterior left leg. A near circumferential red abrasion of the left ankle measures up to 6.1 cm in width.

*These injuries, having been described above, will not be mentioned in the remainder of the report.*

### **INTERNAL EXAMINATION**

The body is opened with a routine thoracoabdominal incision. The skeletal muscle has a dark red-brown color and a normal smooth texture.

### **BODY CAVITIES**

Approximately 20 ml of sanguineous fluid is in the right pleural cavity and approximately 600 ml of sanguineous fluid is in the left pleural cavity. No abnormal collections of fluid are in the peritoneal cavity. No adhesions are in the pleural spaces or peritoneal cavity. All body organs are in a normal and anatomic position. The serous surfaces and pericardium are smooth and glistening.

### **CARDIOVASCULAR SYSTEM**

The heart weighs 420 grams. The coronary arteries arise normally and follow the distribution of a right dominant pattern with no significant atherosclerosis. Both ventricles appear dilated. The chambers and valves are proportionate. The valves are normally formed, thin, pliable and free of vegetations and degenerative changes. The valve circumferences are as follows: tricuspid valve, 13.9 cm; pulmonary valve, 7.2 cm; mitral valve, 10.4 cm; aortic valve, 5.7 cm. The myocardium is dark red-brown, firm, and free of fibrosis, erythema, pallor and softening. The atrial and ventricular septa are intact and the septum and free walls are free of muscular bulges. The left ventricle measures 1 cm and the right ventricle measures 0.2 cm in thickness as measured 1 cm below the respective atrioventricular valve annulus. The interventricular septum measures 1.1 cm in thickness. The aorta and its major branches arise normally and follow the usual course with no significant aortic atherosclerosis. The orifices of the major aortic vascular branches are patent. The vena cava and its major tributaries are patent, return to the heart in the usual distribution, and are unremarkable.

### **RESPIRATORY SYSTEM**

The left and right lungs weigh 540 and 600 grams, respectively. The upper and lower airways are unobstructed and the mucosal surfaces are smooth and yellow-tan. The pleural surfaces are smooth, glistening, and unremarkable. The pulmonary parenchyma is red-purple and free of consolidation and masses. The cut surfaces of the lungs exude mild amounts of blood. The pulmonary arteries are normally developed and unremarkable. There is no saddle embolus on in situ examination of the pulmonary trunk.

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### **HEPATOBIILIARY SYSTEM AND PANCREAS**

The liver weighs 1820 grams. The hepatic capsule is smooth, glistening, and intact, covering a red-brown parenchyma. A thin-walled gallbladder contains green watery bile without stones. The pancreas has a normal size, shape, position, and tan lobulated appearance.

### **GASTROINTESTINAL SYSTEM**

The esophagus is lined by a gray-white smooth mucosa. The gastroesophageal junction is unremarkable. The gastric mucosa is arranged in the usual rugal folds and the lumen contains approximately 50 ml of partially digested food fragments. The small bowel has a uniform dimension and appears unremarkable. The vermiform appendix is present. The colon has a uniform dimension and appears unremarkable. There are no diverticula or externally obvious masses.

### **GENTOURINARY SYSTEM**

The left and right kidneys weigh 140 and 160 grams, respectively. The renal capsules are smooth, thin, semitransparent, and strip with ease from the underlying smooth, red-brown, firm, cortical surfaces. The cortices are of normal thickness and delineated from the medullary pyramids. The calyces, pelves, and ureters are non-dilated and free of stones. The urinary bladder contains clear yellow urine. The bladder mucosa is gray-tan and smooth. The prostate has a tan cut surface and is not enlarged. The testicles are of normal size, shape and position with tan homogenous cut surfaces.

### **RETICULOENDOTHELIAL SYSTEM**

The spleen weighs 120 grams and has a smooth intact capsule covering a red-purple moderately firm parenchyma. Regional lymph nodes are grossly unremarkable. The thymus is involuted.

### **ENDOCRINE SYSTEM**

The thyroid gland is of normal position, size and texture. The adrenal glands have normal cut surfaces with yellow cortex and brown medulla. The pituitary gland is grossly unremarkable.

### **NECK**

A layered examination of the soft tissues of the neck, including strap muscles and large vessels, reveals no abnormalities. The hyoid bone and thyroid cartilage are intact. The laryngeal mucosa is unremarkable. The tongue is normal.

### **HEAD**

The skull is of normal thickness and without fracture. The brain weighs 1460 grams. The dura mater and falx cerebri are intact, and not adherent to the brain. The leptomeninges are thin and transparent. There is no epidural, subdural or subarachnoid hemorrhage. The cerebral hemispheres are symmetrical with a normal gyral pattern. The structures at the base of the brain,

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including cranial nerves and blood vessels, are free of abnormality. Sections through the brain reveal no contusions, hemorrhage or mass lesions within the cerebral hemispheres, brainstem or cerebellum. The cerebral ventricles are of normal caliber.

### **MUSCULOSKELETAL SYSTEM**

The bony framework, supporting musculature, and soft tissues are not unusual. The cervical spinal column is stable on internal palpation.

### **SPECIMENS**

At the time of autopsy, vitreous fluid, cavity blood, urine and a DNA blood card are retained.

### **EVIDENCE**

See "Property/Evidence Log Release Form" for evidence transferred to the investigating agency.

### **RADIOGRAPHS**

A full body radiograph shows no radiopaque objects consistent with a projectile.

### **HISTOLOGY**

#### **SLIDE INDEX**

Slide #1	Heart
Slide #2	Right lung, Right kidney
Slide #3	Left lung, Left kidney
Slide #4	Liver, Spleen, Brain

### **MICROSCOPIC DESCRIPTION**

**Cardiovascular System:** Sections of the right ventricle, left ventricle and interventricular septum show scattered cardiomyocytes with hypertrophic nuclei.

**Respiratory System:** Sections of the right and left lungs show pulmonary vascular congestion and occasional peribronchiolar anthroctic pigment deposition, with intra-alveolar edema fluid and red blood cells. Intra-bronchiolar mucus is most prominent in the left lung. No polarizable material is seen.

**Kidneys:** Sections of the right and left kidneys show unremarkable glomeruli with autolysis of tubular epithelium. No polarizable material is seen.

**Liver:** A section of the liver shows sinusoidal congestion and scattered hepatocytes with glycogenated nuclei.

**Hematopoietic System:** A section of the spleen shows unremarkable alternating areas of white

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and red pulp.

**Nervous System:** A section of the brain shows vacuolation of the neuropil with occasional corpora amylacea and no hypereosinophilic neurons with shrunken nuclei.

**TOXICOLOGY**

See separate toxicology report.