



Armed Forces Medical
Examiner System

DEFENSE HEALTH AGENCY
115 PURPLE HEART DRIVE
DOVER AIR FORCE BASE, DELAWARE 19902

AUTOPSY REPORT

Autopsy Number: ME18-0260
Name: McDermott, Felix Kirkland
Grade: Retiree, US Army
Date of Birth: 16 November 1935
Date of Death: 9 April 2018
Place of Death: Louis A. Johnson VA Medical Center, Clarksburg, WV
Date/Time of Autopsy: 24 October 2018 @ 0730
Place of Autopsy: Dover AFB, DE
Date Report Signed: 13 February 2019

Circumstances of Death: By report, this Retiree was admitted to the Louis A. Johnson VA Medical Center on 6 April 2018. He was diagnosed with aspiration pneumonia and his condition was improving and had daily fingerstick blood glucose levels of 100-181 mg/dL from 6-8 April 2018. In the early morning of 9 April 2018, he developed severe shortness of breath and acute severe hypoglycemia. His initial finger stick blood glucose was 12 mg/dL (laboratory confirmation of 30 mg/dL at 0217) and the hypoglycemia was refractory to multiple ampules of D50 solution and 5% dextrose intravenous solution. Due to his deteriorating clinical condition, he was placed on comfort care measures and he passed away later that morning at 0900. Under jurisdiction of the VA Office of the Inspector General, the remains were disinterred on 23 October 2018 and brought to Dover AFB for autopsy.

Authorization for Autopsy: Armed Forces Medical Examiner, IAW 10 USC 1471.

Identification: Presumptive identification is made by a hospital identification band around the right wrist. A DNA sample is retained for record.

CAUSE OF DEATH: Exogenous insulin administration.

OTHER CONTRIBUTING FACTORS: Aspiration pneumonia, chronic obstructive pulmonary disease, dementia, hypertensive atherosclerotic cardiovascular disease.

MANNER OF DEATH: Homicide.

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EXTERNAL EXAMINATION

The body is received in a gray casket. The body is clad in the clothing listed below. A hospital identification band labeled with the deceased's demographic information is attached to the right wrist.

The body is that of a partially decomposed embalmed male. The body is 69 inches in length and weighs 150 pounds. Injuries are described in the section "Evidence of Injury" and medical therapy is described in the section "Medical Intervention." Rigor is absent. There is partial fixed lividity on the posterior surface of the body except in the areas exposed to pressure. There is marked decomposition with mold growth, tan-brown skin discoloration, and partial adipocere formation of the head, neck, upper torso, both forearms and hands, and both lower extremities distal to the lower thigh. There is mummification of the head, both distal forearms, both hands, both legs, and both feet. There is partial adipocere formation with marked distal desiccation of the extremities. There is evidence of post-mortem insect activity with marked amounts of deceased flies and moderate live insect activity. The lower anterior and posterior torso are relatively preserved with mild amounts of skin sloughing and brown-black skin discoloration.

The head is mummified with relative sparing of the posterior scalp. The scalp hair is brown-gray and measures up to 1 1/4 inch in greatest length. Facial hair is not identified. Plastic eye covers underlie mummified eyelids; the orbits are otherwise empty. The ears are mummified. The nasal skeleton and maxilla are palpably intact. The external nares are free of abnormal secretions. The lips are mummified and without evident injury. The mouth is sutured closed; removal of the suture demonstrates deceased insects in the oral cavity. The teeth are absent. There is a 1 1/2 x 1/4 inch defect on the right side of the neck with suture material and underlying packing material, consistent with embalming. The chest demonstrates no external evidence of injury to the ribs and sternum. The abdomen is mildly protuberant with a 1/4 inch embalming port in the right upper quadrant of the abdomen. The genitalia are those of an adult male. The anus and perineum are unremarkable. The extremities show no evidence of fractures. The fingernails are intact. No scars are noted. Tattoos are noted on the right arm and left arm.

CLOTHING AND PERSONAL EFFECTS

The body is clad in a green Army service jacket (with medal rack and Airborne pin), black tie, green shirt, white underwear, green service pants, and black socks. A plastic undergarment covers the abdomen and proximal lower extremities. Plastic sleeves are on both arms. The clothing has moderate mold growth. The body is received with a green blanket and white sheet.

MEDICAL INTERVENTION

There is no evidence of acute medical or surgical intervention.

RADIOGRAPHS

Postmortem radiographs are obtained and show no radiographic evidence of acute traumatic injury. There is a benign ossification of the right iliac bone that extends posteriorly to the hip joint.

EVIDENCE OF INJURY

A 1 3/4 x 1 inch area of ecchymosis on the left lower abdomen with an underlying 4 x 2 centimeter area of superficial hemorrhage within the subcutaneous adipose tissue (see "Microscopic Examination" slide 14).

INTERNAL EXAMINATION

BODY CAVITIES:

The body is opened by the usual thoracoabdominal incision and the chest plate is removed. The ribs, sternum, and vertebral bodies are visibly and palpably intact. There is approximately 100 milliliters of decomposition fluid in each of the pleural cavities and approximately 50 milliliters of decomposition fluid in the peritoneal cavity. There is a 3 x 3 inch abdominal mesh on the peritoneal surface of the anterior abdominal wall. The thoracic organs are firm and mildly discolored, consistent with previous embalming.

HEAD (CENTRAL NERVOUS SYSTEM) and NECK:

The scalp is desiccated. There are no skull fractures. The dura mater and falx cerebri are intact and the brain is completely autolyzed. There is no epidural, subdural or subarachnoid hemorrhage present. The atlanto-occipital joint is stable. The autolyzed brain weighs 860 grams.

The neck is partially desiccated. The anterior strap muscles of the neck are homogenous and red-brown, without hemorrhage. The thyroid cartilage and hyoid bone are intact. The larynx is lined by intact mucosa and contains deceased insects.

CARDIOVASCULAR SYSTEM:

The heart is contained in an intact pericardial sac. The epicardial surface is smooth. The coronary arteries are present in a normal distribution and demonstrate focal narrowing of the left anterior descending coronary artery (75% occluded); the remaining coronary arteries are widely patent. The myocardium is firm and homogenous. The valve leaflets are thin and mobile. The walls of the left ventricle, interventricular septum, and right ventricle measure 1.8, 2.1, and 0.5 centimeters thick, respectively. The endocardium is smooth and glistening. The aorta gives rise to three intact and patent arch vessels and has moderate to marked calcific atherosclerosis, greatest at the iliac bifurcation. The renal and mesenteric vessels are unremarkable. The vena cavae and its major tributaries return to the heart in the usual distribution and are free of thrombi. The heart weighs 540 grams.

RESPIRATORY SYSTEM:

The upper airway is free of abnormal secretions. The mucosal surfaces are smooth, intact, and unremarkable. The pleural surfaces are smooth, glistening, and unremarkable bilaterally. The pulmonary parenchyma is diffusely congested, exuding slight amounts of bloody fluid with a 0.6 centimeter benign calcification in the left lower lobe. No other focal lesions are noted. The pulmonary arteries are normally developed and patent without thrombus or embolus. The right and left lungs weigh 640 and 620 grams, respectively.

HEPATOBIILIARY SYSTEM:

The liver has an intact, smooth capsule covering brown parenchyma with no focal lesions noted. The gallbladder contains approximately 1 milliliter of bile and no stones. The extrahepatic biliary tree is patent. The liver weighs 900 grams.

GASTROINTESTINAL SYSTEM:

The esophagus is lined by smooth, intact mucosa. The stomach, small bowel, and colon are unremarkable. The stomach is empty. The pancreas is firm and pink-tan with no masses or nodules identified. The appendix is present.

GENITOURINARY SYSTEM:

The renal capsules are smooth, thin, and strip with ease from the underlying granular, red-brown cortical surfaces. The cortices are sharply delineated from the medullary pyramids. The left renal pelvis is mildly dilated. The calyces and ureters are unremarkable. The bladder contains no urine. The testes and prostate gland are unremarkable. The right and left kidneys weigh 160 grams each.

LYMPHORETICULAR SYSTEM:

Lymph nodes in the hilar, peri-aortic and iliac regions are not enlarged. The 180 gram spleen has a smooth, intact capsule covering red-purple parenchyma.

ENDOCRINE SYSTEM:

The pituitary gland is autolyzed. The thyroid gland is not identified. The right and left adrenal glands are symmetric, with bright yellow cortices, red-brown medullae, and no masses or areas of hemorrhage identified.

MUSCULOSKELETAL SYSTEM:

There is a benign ossification of the right iliac bone that extends posteriorly to the hip joint (identified radiographically, see "Radiographs"). No other abnormalities of muscle or bone are identified.

MICROSCOPIC EXAMINATION

Selected portions of organs are retained in formalin with the preparation of slides.

Slide 1 (pancreas): section demonstrates preserved pancreatic tissue with appropriate islet formation. Immunohistochemical staining for insulin demonstrates appropriate insulin staining within the islet cells with appropriate positive and negative internal controls with no discernable embalming artifacts.

Slide 2 (lung, right upper lobe), slide 3 (lung, right middle lobe), slide 4 (lung, right lower lobe), slide 5 (lung, left upper lobe), and slide 6 (lung, left lower lobe): sections of the lungs demonstrate scattered intra-alveolar and interstitial acute and chronic inflammation to include occasional multinucleated giant cells (greatest in the left upper lobe), and diffuse emphysematous changes with anthracosis deposition.

Slide 7 (kidney): section shows moderate glomerulosclerosis, mild hyaline arteriolosclerosis, and patchy interstitial nephritis.

Slide 8 (spleen): section shows appropriate lymphoid follicle formation.

Slide 9 (liver): section shows mild periportal fibrosis and periportal bile duct proliferation.

Slide 10 (left anterior descending coronary artery): section shows an arterial vessel occluded with calcific atherosclerosis and intimal thickening (degree of narrowing unable to be determined due to incomplete sectioning).

Slide 11 (heart, lateral left ventricle), slide 12 (heart, ventricular septum), and slide 13 (heart, right ventricle): sections show scattered myocyte hypertrophy, scattered focal areas of interstitial fibrosis, and a focal area of organizing granulation tissue of the septum.

Slide 14 (skin and soft tissue, left abdomen): section shows autolytic skin with underlying subcutaneous hemorrhage. Immunohistochemical staining for insulin demonstrates scattered granular positivity within the periphery of lipocytes and the interstitium. Polarization demonstrates scattered birefringent crystals, some of which stain positive for insulin.

ADDITIONAL REMARKS

1. Documentary photographs are taken by an AFMES Mortuary Affairs Specialist (92M). Representatives from the FBI and VAOIG attended the autopsy. A complete list of all individuals in attendance is on file.
2. Selected portions of organs and fluids are retained for toxicology and/or DNA identification.
3. Personal effects are released with the body.
4. No evidence is recovered at autopsy.

FINAL AUTOPSY DIAGNOSES

- I. Evidence of exogenous insulin administration:**
- A. Area of subcutaneous hemorrhage in the left abdomen with histologic and immunohistochemical findings consistent with subcutaneous insulin injection.
 - B. Episode of severe hypoglycemia refractory to multiple ampules of D50 solution and 5% dextrose intravenous solution (initial finger stick blood glucose of 12 with laboratory confirmation of 30 mg/dL) in the early morning of 9 April.
 - C. No hospital record of insulin administration or physician/nursing order for subcutaneous insulin injection.
 - D. No medical history of diabetes, use of oral hypoglycemic agents, or previous insulin administration.
- II. Other contributing factors:**
- A. Hypertensive atherosclerotic cardiovascular disease:
 - 1. Focal severe atherosclerotic cardiovascular disease with 75% occlusion of the left anterior descending coronary artery.
 - 2. Moderate to marked calcific atherosclerosis of the aorta and proximal iliac arteries.
 - 3. Cardiomegaly with left ventricular hypertrophy.
 - 4. Kidneys with gross nephrosclerosis, consistent with hypertension.
 - B. Lungs with emphysematous changes and histologic evidence of pneumonia, consistent with clinical history of chronic obstructive pulmonary disease and aspiration pneumonia.
- III. Medical history of clinical dementia.**
- IV. Postmortem artifacts/alterations: previous embalming with marked decomposition of the head, neck and distal extremities.**
- V. Toxicology (AFMES #184462):**
- A. VOLATILES:
 - 1. Heart blood positive for methanol (0.149g%) and ethanol (0.020g%).
 - 2. Liver tissue positive for methanol (0.129g%).
 - B. DRUGS: heart blood positive for sertraline (12 ng/mL), citalopram (324 ng/mL), desmethylcitalopram (65 ng/mL), carbamazepine (0.47 mcg/mL), donepezil (72 ng/mL), fentanyl (0.37 ng/mL), and memantine (450 ng/mL).

OPINION

This 82 year old male, Felix Kirkland McDermott, died of exogenous insulin administration. A subcutaneous insulin injection site was identified on the left side of the abdomen.¹ This finding is consistent with the clinical history of a profound hypoglycemic event that occurred the morning of 9 April that was refractory to multiple ampules of D50 solution and 5% dextrose intravenous solution. The deceased was not diabetic and had no history of oral hypoglycemic use or previous insulin administration. There were no hospital orders for administration of insulin. Toxicologic analysis is consistent with embalming and his prescribed medications.

There were multiple co-morbidities that contributed to his overall poor health, including aspiration pneumonia, chronic obstructive pulmonary disease, dementia, and hypertensive atherosclerotic cardiovascular disease. Despite these co-morbidities, he was demonstrating clinical improvement during this hospitalization until this episode of refractory hypoglycemia. This clinical deterioration led to the patient being placed on comfort care measures and he died several hours later.

This case represents the administration of unprescribed insulin to a non-hyperglycemic, non-diabetic patient in a hospital setting. Based on the investigative and autopsy findings, the manner of death is homicide.

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Paul Uribe
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Deputy Medical Examiner

¹ Lutz R, Pedal I, Wetzel C, and Mattern R. Insulin injection sites: morphology and immunohistochemistry. Forensic Science International; 90 (1997); 93-101.