

ADANALIAN, Linda

00-02-018

**Fresno County Coroner - Autopsy Report**

Case: 00-02-018  
Name: ADANALIAN, Linda  
DOD: 02/11/00  
Date Performed: 02/12/00; 09:45 a.m.  
Performed At: Fresno County Morgue  
Performed By: Albert Siu, M.D.  
Present: Steven Chooljian, M.D.

**PERSONAL EFFECTS:**

When first viewed, the body has on a hospital gown.

**EXTERNAL EXAMINATION:**

The body is that of a well developed, well nourished, white female, appearing consistent with the stated age of 37. The body measures 64" in length and weighs 153 pounds. Rigor mortis is fully established, and livor mortis is present on the back. The body is cool to the touch.

The head hair is dark brown. The irides are brown and unremarkable. There is no hemorrhage on the conjunctivae. The teeth are in good condition.

The face, neck, chest, abdomen, and back appear symmetric and atraumatic. No deformities are seen on the upper and lower extremities. The external genitalia are unremarkable.

**THERAPEUTIC PROCEDURES:**

1. Defibrillator pads are present on the chest.
2. Electrocardiogram patches are present.
3. There is an orotracheal tube in place.
4. Intravenous catheters are placed in the left and right antecubital fossae.
5. An intravenous catheter is placed in the right wrist area.
6. A Foley catheter is in place.

**SCARS AND TATTOOS:**

None visible.

**INJURIES:**

None.

**INTERNAL EXAMINATION:**

**BODY CAVITIES:** Reflection of the soft tissue in the chest does not reveal any rib fractures. All internal organs in the chest and abdomen are present, and these have normal anatomic relationships. There is approximately 300 ml of blood in the right chest cavity. No blood is present in the left chest cavity, the pericardial sac, or the abdomen.

**CARDIOVASCULAR SYSTEM:** The heart weighs 280 gm, and the epicardial aspect is unremarkable. The valves are normally formed with delicate leaflets, and no vegetations are present. The chordae tendineae and the papillary muscles are intact. There is minimal coronary artery disease in the left anterior descending, the left circumflex, and the right coronary arteries. The atrial and ventricular septa are intact. There is dilatation of the right ventricle to 5 cm. However, there is only mild dilatation of the left ventricle, and there is no hypertrophy of the cardiac muscle. There is no evidence of acute myocardial infarction. The great vessels are normally related and are intact.

**RESPIRATORY SYSTEM:** The tip of the orotracheal tube is correctly positioned. No obstructing materials are present in the trachea or major bronchi. After removal of the orotracheal tube, the larynx is patent. The right and left lungs weigh 1000 and 920 gm, respectively. Both lungs are similar in appearance with dark red pleural surfaces. The cut surfaces of both lungs show edema and congestion. There is no evidence of tumor, abscess, or thromboembolism.

**GASTROINTESTINAL SYSTEM:** The gastrointestinal tract is intact throughout its length. Esophageal and gastric mucosa are free of hemorrhage or ulceration. The stomach contains an estimated 150 ml of green-brown cloudy fluid, but no blood is present in the gastric contents. No ulcer is present in the duodenum. The small and large intestines are free of masses. The appendix is present in the cecum and is free of exudate.

**HEPATOBIILIARY SYSTEM:** The liver weighs 1830 gm, and the hepatic capsule is smooth and intact. The hepatic parenchyma is red-brown, and no nodules are present. The extrahepatic biliary system is not dilated. The gallbladder contains scant bile, and no stones. There is some edema in the gallbladder wall.

**PANCREAS:** The pancreas has the usual tan lobular architecture, and there is no evidence of hemorrhage, necrosis, or fibrosis.

**HEMATOPOIETIC SYSTEM:** The spleen weighs 340 gm, and the splenic capsule is intact. The cut surface of the spleen shows the usual white and red pulp areas, and the white pulp areas do not appear expanded. There is no lymphadenopathy in the neck, mediastinum, or abdomen.

**GENITOURINARY SYSTEM:** The right and left kidneys weigh 120 and 150 gm, respectively. Both kidneys are similar in appearance, and there is some granularity on the cortical surfaces. The renal architecture is intact with clearly identifiable cortex and medulla. There is no hydronephrosis. The urinary bladder contains virtually no urine due to the presence of the Foley catheter.

The uterus is not enlarged. The right and left adnexa are unremarkable.

**ENDOCRINE SYSTEM:** The pituitary gland is not enlarged. The thyroid gland is bilobed and is nonnodular. The adrenal glands are free of hemorrhage or necrosis.

**CENTRAL NERVOUS SYSTEM:** The scalp is reflected and shows no subgaleal hemorrhage. No fractures are seen on the calvarium. The meninges are clear, glistening, and intact. There is no hemorrhage in any of the meningeal compartments. The brain weighs 1300 gm. The right and left hemispheres are symmetric, and the gyri and sulci are unremarkable. Sections of the hemispheres do not show areas of hemorrhage or discoloration. The brainstem and cerebellum are unremarkable, and there is no evidence of edema or herniation.

**NECK ORGANS:** The hyoid bone and thyroid cartilage are intact. No hemorrhage is present in the soft tissue of the neck.

**MATERIAL FOR HISTOLOGY:**

Biopsies of chest organs, abdominal organs, and brain are submitted for histology. The heart, and left and right lungs are saved in formalin.

**MATERIAL FOR TOXICOLOGY:**

Heart blood is submitted for toxicology.

**MICROSCOPIC SECTIONS:**

Initial histologic slides are labeled FC00-107A-O. Subsequently, additional tissue is submitted for microscopic examination and labeled as follows: FC00-169A-B, heart muscle; FC00-170A-C, right and left lungs; FC00-171, GI tract.

**CARDIOVASCULAR:** Multiple sections of coronary artery show patency of the vascular lumina confirming the gross impression of minimal coronary artery disease. The myocardial fibers do not show necrosis, and there are no changes of acute or old myocardial infarction. A few lymphocytes infiltrate the myocardium.

**RESPIRATORY:** Multiple sections of the lungs reveal marked congestion and patchy edema. There is no pulmonary embolism, pulmonary hypertension, or bronchopneumonia. Eosinophils around bronchi are few, and there is no support for the diagnosis of bronchial asthma. There is no evidence of adult respiratory distress syndrome.

**GASTROINTESTINAL:** Sections of esophagus, stomach, and appendix do not show ulceration, hemorrhage, or acute inflammation.

**HEPATOBIILIARY:** The liver is completely within normal limits, with the usual architecture.

**PANCREAS:** The pancreas is within normal limits.

**HEMATOPOIETIC:** The spleen has the usual formation of red and white pulp areas.

**GENITOURINARY:** Sections of the right and left kidneys show intact glomeruli. There is no evidence of tubular necrosis.

**ENDOCRINE:** The thyroid gland shows chronic lymphocytic thyroiditis. The adrenal glands are free of hemorrhage or necrosis.

**CENTRAL NERVOUS SYSTEM:** There is no evidence of meningitis. There are no areas of hemorrhage or necrosis in the cerebri or cerebellum.

**GROSS DIAGNOSIS:**

- I. Bilateral ventricular dilatation.
- II. Bilateral pulmonary edema and congestion.
- III. Splenomegaly.
- IV. Right hemothorax, 300 ml.
- V. Minimal coronary artery disease.

Toxicology: Drug screen on blood is negative.

**FINAL DIAGNOSIS:**

- I. Bilateral ventricular dilatation.
- II. Bilateral pulmonary edema and congestion.
- III. Splenomegaly.
- IV. Right hemothorax, 300 ml.
- V. Minimal coronary artery disease.
- VI. Chronic lymphocytic thyroiditis.

**ADDENDUM - 06/04/00:**

On 6/3/00, beginning at approximately 11:00 a.m., a second autopsy was conducted in the presence of Dr. Eric Pfeifer of the Mayo Clinic, Dr. Steve Avalos, and Dr. Venu Gopal, who witnessed the opening of the casket.

After reexamination of the organs, the following samples were collected to be saved, frozen, or for additional testing.

1. Parts of dura, brain, and cerebellum.
2. Portion of liver (400 gm).
3. One half of a kidney and the other complete kidney.
4. Part of pancreas.
5. Vertebral bone marrow.
6. Segments of small and large intestines.
7. Portion of spleen.
8. Skin and skeletal muscle from left and right gluteal areas.
9. Gastric washings.
10. Vitreous washings.
11. Toenails.
12. Hair from head, pubis, and neck.

Gastric washings, brain, liver, and kidney were sent from this office for heavy metal poison testing.

Dr. Pfeifer also retained portions of the above samples for his testing.

**ADDENDUM - 07/29/01:**

CARDIOVASCULAR: Subsequently, the heart is grossly reexamined, and the coronary ostia are within normal limits.

**Selenium Assay Results:**

Liver:	2.64-2.65 mcg/gm dry wt (Mayo Clinic 06/13/00)
Kidney:	9.96-10.28 mcg/gm dry wt (Mayo Clinic 06/13/00)
Liver:	2.27-2.35 mcg/gm dry wt (Mayo Clinic 02/05/01)
Kidney:	4.99-5.06 mcg/gm dry wt (Mayo Clinic 02/05/01)
Lung:	0.88-1.01 mcg/gm dry wt (Mayo Clinic 02/05/01)
Spleen:	1.40-1.50 mcg/gm dry wt (Mayo Clinic 02/05/01)
Kidney:	3.2 mcg/gm wet wt (Baylor Toxicology Service 01/11/01)
Whole Blood:	380 mcg/L (ExperTox, Inc. 01/29/01)
Liver:	1.48 mcg/gm wet wt (National Medical Services, Inc. 03/05/01)
Plasma:	90 mcg/L (National Medical Services, Inc. 03/23/01)
Hair:	None detected (National Medical Services, Inc. 03/23/01)
Liver:	0.46 mcg/gm wet wt (National Medical Services, Inc. 03/23/01)
Kidney:	1.11 mcg/gm wet wt (National Medical Services, Inc. 03/23/01)

**LETTERS OF OPINION:**

Letters of opinion regarding selenium toxicity as the cause of death have been obtained from:

1. Henry A. Spiller, M.S., of the Kentucky Regional Poison Center
2. Eric A. Pfeifer, M.D., of the Mayo Clinic
3. G.N. Schrauzer, Ph.D., of the Biological Trace Element Research Institute
4. Bernard H. Eisenga, M.D., Ph.D., and John H. Trestrail, of Toxicology Consulting, PLLC
5. James E. Cisek, M.D., of the Virginia Poison Center
6. Richard F. Clark, M.D., of the California Poison Control System
7. George F. Jackson, Ph.D., of National Medical Services, Inc.
8. Brent Furbee, M.D., of the Indiana Poison Center
9. Raymond F. Burk, M.D., of Vanderbilt University Medical Center

10. Kern Nuttall, M.D., Ph.D., Consultant in Laboratory Medicine in Salt Lake City
11. Yale H. Kaplan, Ph.D., of National Scientific Services; Baltimore, Maryland
12. Alphonse Poklis, Ph.D., of the Medical College of Virginia

**OPINION AS TO THE CAUSE OF DEATH:**

Acute selenium toxicity.

**MANNER OF DEATH:**

Undetermined.

**COMMENT:**

My opinion on the cause of death was reached due to the lack of anatomic findings of the autopsy, negative toxicology results for common drugs and poisons, and the elevated selenium levels in the organs. Should new information be provided to dispute these conclusions, revision of the conclusions may be necessary.

*Albert Siu, M.D.*

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**ALBERT SIU, M.D.**

Forensic Pathologist

AS/mmf

d: 02/12/00;04/28/00;06/04/00;07/29/01

t: 02/14/00;04/28/00;07/27/00;07/30/01

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ADDENDUM - February 7, 2003:

**COMMENT:**

After examining additional information and the documents regarding the circumstances surrounding death, I am amending my autopsy report with regard to the manner of death.

There is no reasonable basis for concluding that death was caused by accidental or intentional ingestion of selenium.

In my opinion, there is a high probability of homicide. Should new information be provided to dispute this conclusion, revision of the conclusion may be necessary.

**MANNER OF DEATH:**

Homicide.

Albert Siu, MD      2/7/03  
ALBERT SIU, M.D.  
Forensic Pathologist

AS/mmf

d: 02/07/03

t: 02/07/03