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Doctor Albert Siu  
Fresno County Coroner's Office  
2221 Kern Street  
Fresno, CA 93721

Dear Doctor Siu:

This letter summarizes my conclusions as to the cause of death of Mrs. Linda Adanalian. In my opinion, Mrs. Adanalian died as the result of acute toxicity from selenium.

My involvement with the case has included a review of her medical records, telephone conversations with her physicians Drs. Steven Chooljian and John Mosher, and with yourself, who performed the autopsy on Linda Adanalian. I have read her autopsy report, reviewed the toxicology studies, and have examined the histological preparations, and agree with all the anatomical findings. Last June, I was invited to the Fresno County Coroner's Office, where I was given a number of tissue samples from the exhumed body of Linda Adanalian. These were mailed by the Fresno County Coroner's Office to the Mayo Clinic, where I received them and placed them in a secured toxicology laboratory, with the usual chain-of-custody procedure. Tissue samples were subjected to multiple toxicologic analyses, including those for common drugs of abuse, prescribed, and over-the-counter medications. Because of a clinical history of gastrointestinal disturbances, we performed an expanded toxicologic assay, which included colchicine, phosphates, cardiac glycosides, and heavy metals. As you know, these tests were all negative. We tried another approach using a "total-quant" screening assay algorithm on our metals laboratory mass spectrometer, which showed a peak in the tissue level of selenium. A previous report of selenium poisoning prompted us to confirm the level using specific tests. High levels of selenium in several of Linda Adanalian's tissues have now been confirmed by at least three separate laboratories.

The postmortem tissues, even those tested almost one year since her death, show significantly elevated levels of selenium. The high levels are corroborated by at least three independent laboratories, namely Mayo Medical Laboratories (metals laboratory), Rochester, MN, National Medical Services Laboratory, Willow Grove, PA, and Baylor Toxicology Services, Houston, TX (results are reported below). The Mayo Medical Laboratories analyses were carried out on two separate occasions (separated by approximately 6 months) on dry tissue samples from various organs, using mass

spectrometry. The analytical instrument was tested with a certified Standard Reference Material (SRM) and was found accurate; in both instances, significantly elevated levels of selenium were found, which exceeded normal human levels in published control populations, and were in the range of levels reported in acute selenium toxicity. All three laboratories report tissue concentrations of selenium, which are in the range of reported human selenium toxicity. The clinical presentation and, that elevated levels of selenium were not present in the hair, favors acute toxicity rather than chronic poisoning.

Table: Results of tissue selenium analysis of Linda Adanalian

Laboratory	Kidney	Liver	Lung	Spleen	Hair	Whole Blood
Mayo Clinic, June 2000	9.960-10.285 micrograms/g (dry weight)	2.644-2.650 micrograms/g (dry)			0.353-0.470 micrograms/g (dry)	
Mayo Clinic, Feb 2001	4.941-5.062 micrograms/g (dry)	2.273-2.352 micrograms/g (dry)	0.879-1.009 micrograms/g (dry)	1.398-1.502 micrograms/g (dry)		
Baylor Toxicology Services	3.2 micrograms/g (wet weight)					
National Medical Services	1.02 micrograms/g (wet weight)	1.48 micrograms/g (wet weight)				
Expertox						38 micrograms/dL (0.38 micrograms/mL)

The reported postmortem blood selenium level of 38 micrograms/dL (Mineral King Laboratory via Expertox) is NOT normal, being approximately three times more elevated than the normal average, and higher than any reported normal range (even ranges measured in persons occupationally exposed to selenium). I have enclosed the references for whole blood selenium levels provided to me from the toxicology division of the Centers for Disease Control, Atlanta, Georgia. Mathematically 38 micrograms/dL is the same as 0.38 micrograms/mL. Linda Adanalian's postmortem blood level of 0.38 micrograms/mL is in the range of documented cases of selenium toxicity.

The reported postmortem kidney selenium level of 3.2 micrograms/gram (Mineral King Laboratories via Baylor Toxicology Services) is not only elevated; it is markedly elevated, and represents probably the highest level measured in any of the laboratories, including Mayo Clinic and National Medical Services Laboratory. I have spoken on the telephone with the Assistant Director at Baylor Toxicology Services, who said that the

elemental analyses there are carried out on wet tissue, not dry tissue. An estimate of dry weight value from wet weight is to divide the wet weight by 0.2. Thus a level of 3.2 micrograms/g weight is approximately 16 micrograms/g dry weight. Even without conversion, the levels are significantly elevated when compared with studies reporting results in wet weight.

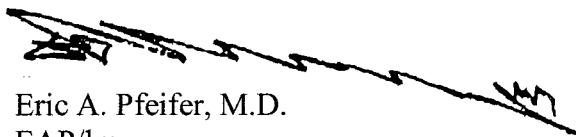
The clinical presentation and postmortem anatomical findings, while not specific for selenium poisoning, are very consistent with documented cases (see references 1-11, below). The autopsy has uncovered no anatomical cause of death. I have personally examined her heart, grossly and microscopically, and concur with the anatomical diagnoses rendered by you and the three separate cardiovascular pathologists from Stanford University, Armed Forces Institute of Pathology, and Mayo Clinic. I do not concur, based on evaluation of the entire clinical presentation and laboratory data, with the reported comment by my colleague, Dr. William Edwards, that death was most likely cardiovascular in origin.

I have received a letter (included in this report) from Henry Spiller, Director of the Kentucky Regional Poison Center. I completely agree with his opinion that the clinical presentation and laboratory data are consistent with selenium poisoning.

It is my opinion, based upon the available clinical and laboratory evidence and postmortem anatomical findings, that selenium poisoning has played a major, if not exclusive role in causing Linda Adanalian's death. By itself the selenium toxicity would have been enough to cause her death. This does not rule out the possibility of additional contributory factors, including additional toxic agents that were not detected. It is my advice that, if during an investigation the possibility of additional lethal injury including other toxic agents are discovered, careful evaluations for these be performed.

Doctor Sui, under separate cover I am sending you copies of all the references used in making my conclusion.

I remain faithfully in your service,



Eric A. Pfeifer, M.D.

EAP/lm

cc: David Dalition

Henry Spiller