

Cardiovascular Medicine and Cardiac Arrhythmias
An Incorporated Medical Group

Roger A. Winkle, M.D.
Edward T. Anderson, M.D.
R. Hardwin Mead, M.D.
Michael A. Ruder, M.D.
Nellis A. Smith, M.D.
Bruce A. Benedick, M.D.
Donald St. Claire, Jr., M.D.

Diagnostic Cardiology
Cardiac Electrophysiology
Coronary Interventions
Cardiac Pacing

770 Welch Road, Suite 100 Palo Alto, CA 94304 650-617-8100 fax 650-327-2947
2900 Whipple Avenue, Suite 205 Redwood City, CA 94062 650-363-5262 fax 650-363-5265

March 5, 2000

Mr. David K. Dalition
1503 Eaton Avenue
San Carlos, CA 94070

RE: ADANALIAN, Linda Kay

IDENTIFICATION: I've been asked by Mr. Dalition to review some medical records regarding Linda Kay Adanalian, who expired recently.

HISTORY: Linda was an elementary school teacher in Fresno, was married and the mother of three young children. Her past medical history was pretty unremarkable. From what we can tell, she did not have a prior 12-lead ECG. She had apparently taken Naprosyn for occasional aches and pains. She had a history of some sort of ill-defined anaphylaxis for which she had used an Epipen in the past. She had no major illnesses.

On 2/11/00 she expired. Earlier that day she had told friends that she didn't feel very well but nonetheless, she felt well enough to take her three children to the Ice Capades that evening. She was apparently running across the street when she had chest pain and then collapsed in front of witnesses. She woke spontaneously and then apparently had other witnessed syncopal spells, some of which sound like they were associated with seizures. The paramedics were summoned and apparently when they arrived she was awake and alert and in sinus tachycardia at 110 beats per minute. There are no strips of this. Her blood pressure was 78/palp and she was complaining of shortness of breath. She was placed on oxygen and taken to Community Medical Center in Fresno. She was short of breath and somewhat agitated, with a saturation of 88% on 15 liters and a blood pressure of 78/40. She apparently arrived around 10:30 p.m. An EKG shortly after presentation demonstrates sinus rhythm at 100 beats per minute with a corrected QTC of 457. There is bizarre ST elevation in leads V1 through V6 with ST depression in the inferior leads and ST elevation in leads I and AVL. Her potassium was apparently 3.2. This may have been after the arrest. Her creatinine was 1.3, blood sugar was 240. A chest x-ray reportedly demonstrated no infiltrates or cardiomegaly.

TO: Mr. David K. Dalition
RE: ADANALIAN, Linda Kay
March 5, 2000
Page Two

About 20 to 30 minutes after she arrived, she developed progressive hypotension, hypoxemia and required intubation and had a respiratory arrest and a complete cardiovascular collapse. She did not initially have an arrhythmia although her QRS became wide and bizarre. An hour and fifteen minutes of resuscitative effort using standard medications including epinephrine was then undertaken but she could not be resuscitated. I do not see a white blood cell count in the records. A post was performed following this. Her primary care physician was in attendance and the Emergency Room physician apparently had alerted the coroner to the fact that the patient's death and presentation had been most unusual. Apparently the heart and lungs were read out as being completely normal. They have been saved for further analysis. Toxicology screen and urine screen were negative. There were apparently no signs of bleeding. The family, quite understandably, is surprised that no exact cause of death or explanation for this event can be found. They wanted me to review the records and see if I could shed any light on the situation.

ASSESSMENT: In summary, this is an otherwise healthy 37 year old female who apparently didn't feel very well the day she passed away but felt certainly well enough to go to a social function with her children. The presentation initially is suggestive of an arrhythmia with recurrent witnessed syncope. Her subsequent course, however, is not particularly suggestive of a primary arrhythmic disorder. From the time she was picked up by the paramedics, she was hypoxic and hypotensive and remained so for well over an hour until she experienced a respiratory arrest and ultimately couldn't be resuscitated.

As I discussed with the family, although recurrences of paroxysmal arrhythmia could have rendered her heart so dysfunctional so as to cause persistent hypotension and hypoxia would be most unusual. The persistent hypoxemia and hypotension suggests some more generalized systemic disorder. It's especially remarkable that her post was unremarkable and demonstrated no signs of cardiac disease, pulmonary disease or pulmonary emboli. Her 12-lead ECG, although quite abnormal, is abnormal in a nonspecific way, although it to a certain extent suggest a myocardial infarction, apparently no coronary disease or evidence for this was found at post which essentially rules that out. It's possible that she had spasm but once again one can only speculate about this. She has a history of anaphylaxis but again this presentation was certainly most unusual for that diagnosis.

TO: Mr. David K. Dalition
RE: ADANALIAN, Linda Kay
March 5, 2000
Page Three

If they wanted to pursue this further I think with regard to the autopsy, the lungs and heart could be looked at once again carefully for signs of primary pulmonary hypertension, multiple pulmonary emboli, hypertrophic or dilated cardiomyopathy, anomalous coronary artery origins, occult coronary disease or arrhythmogenic right ventricular dysplasia.

The presence of atypical ST elevation on her initial EKG could be indicative of Brugada syndrome, however, once again this is not a typical presentation of Brugada syndrome and there are other reasons why the EKG could have had this appearance as I've discussed above. If an old EKG could be found, it would be interesting to see if it demonstrated any suggestion of Brugada syndrome (resting atypical ST elevation in leads V1 through V3 with atypical right bundle branch block), or long QT syndrome. Again these entities cause arrhythmias and this presentation is not typical of a recurrent arrhythmia at least after she was picked up by the paramedics.

With regard to her children possibly having inherited a tendency to have a similar event, I think this is quite unlikely. Perhaps for reassurance, a 12-lead ECG could be performed in each of them to make sure there are no signs of any abnormalities such as long QT syndrome or atypical right bundle branch block.

As I discussed with Linda's brother and her father, this entire presentation and course is quite unusual, and particularly given the fact that an autopsy has not demonstrated a cause of exact death is likely to remain uncertain.



NELLIS A. SMITH, M.D.

NAS:kw