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Oncology Sample Case

Overdose of chemotherapy causing nerve damage.

According to the records, the patient was 24 years of age, developed symptoms of low back pain, fever and chills, and on physical examination had an enlarged spleen. He was admitted by Dr. #1 and the diagnosis was leukemia. When the blood count came back the next day and it was analyzed by the physicians at the hospital, it was determined that he had acute undifferentiated leukemia. Dr. #1 decided to start the patient on vincristine and prednisone (a steroid) therapy, and that was reasonable care.

However, regarding the dosage of vincristine (also called Oncovin), the manufacturer, Lilly, and the Food and Drug Administration warn, with regard to overdose: "adults can be expected to experience severe symptoms after single doses of 3 milligrams per meter square or more." The recommendation is that the drug should be administered intravenously at weekly intervals, and for adults the dose should be "1.4 milligrams per meter square."

The patient weighed approximately 160 pounds, and therefore he was not an over-large person. Thus, the dosage should have been less than 2 milligrams intravenously, and they gave him twice that dosage three times.

Vincristine can cause various symptoms, including sensory impairment and paresthesias (abnormal sensations), which the patient experienced in his fingers and his feet, as well as it can cause loss of deep tendon reflexes, foot drop, ataxia (impaired coordination walking), and paralysis. The patient experienced all this, and that occurs "with continued administration."

In my opinion, Dr. #1, the Physicians, and the Hospital departed from the accepted standards of care in prescribing and giving to this patient an overdosage of vincristine,

and they continued to give that overdosage after the patient developed his initial symptoms as I will discuss below.

The first dosage was given on July 19. This is confirmed by the doctor's order, the doctors' progress notes, the medication index, and the nurses' progress notes.

On July 26, the eighth day of hospitalization and a week after getting his overdosage of vincristine, the doctors' progress notes noted "minimal paresthesias in fingertips," and the plan was to "continue vincristine 4 milligram intravenously today." This note is by Dr. #1.

The patient was also being seen by the interns and residents and there are numerous other progress notes showing the medications that the patient was receiving. All these physicians, in my opinion, had a duty to this patient not to endorse and give an overdose of medication.

On August 2, the fifteenth day of hospitalization, the patient received another 4 milligrams of vincristine intravenously.

Although the patient was admitted to the hospital, also with back pain, on August 5, he had increasing soreness and aching in his lower back. That was not considered as a possible red flag for problems.

On August 9, on his twenty-second hospital day, was given another 4 milligrams of vincristine intravenously.

On August 11, he developed an elevated temperature, had a positive blood culture for germs, and did receive appropriate antibiotic therapy. He additionally had the herpes virus infection in his mouth and also received the appropriate anti-viral drug, Zovirax.

On August 12, the on-call physician noted that the patient had myalgia (muscle aches), mainly in the lower extremity, and generalized muscle weakness. This was also noted in the records as weak legs and tingling in his hands and feet on August 14. They concluded that this was "neurotoxicity (nerve poison) effect of vincristine."

On August 15, he had no reflexes from his knees down, and had weakness in his leg muscles. Again they noted this as "neuro-toxicity of vincristine with long tract weakness." The tracts they are referring to are the spinal cord columns of nerve flesh.

On August 15, they again noted that the patient had neurotoxicity of vincristine to the long tracts of the spinal cord.

On August 17, there was some improvement in his muscle strength. The patient was being sent to physical therapy.

The August 21 notes show that his strength was improving, but he still had no reflexes in his ankles.

On July 26, the doctors' progress notes show an order for vincristine to be given at 4 milligrams intravenously, and this is signed by Dr. #1. On August 2, a Doctor whose name appears to be "#2" wrote an order to give the patient 4 milligrams of vincristine intravenously. This same physician also wrote the order for August 9, the same way.

The Nursing Administration record shows the patient did receive that medication on July 19, July 26, and August 2. The patient also received the cancer-fighting drug, Adriamycin, at 40 milligrams intravenously three times, first on August 4, on August 5, and then on August 6. This is a slight overdosage, but the toxic effect relates to heart failure, not nerve damage, and the dosage usually has to be cumulative over a 300-400 milligrams total to cause serious problem for heart injury.

According to the nurses' notes, the patient was walking in the halls on July 22, and was walking in the room on July 24. Thus, he was not admitted with nerve damage. They show he received the vincristine on July 26. On July 27, the patient was complaining of slight numbness in his fingertips as noted in the nursing assessment box, your page number 260. They similarly noted the findings on July 28, your page number 263. On July 30, on page 279, the patient was weak but he was up in the room.

With the numbness in his fingertips, the physician should have assessed the dosage the patient received since this is a well-known nerve damage effect from vincristine, and the higher the dosage, the more nerve damage the patient can experience. This is a red flag that they did not heed, and in my opinion, they all departed from the accepted standards of care.

According to the Nurses' notes, on August 10, the patient had difficulty with numbness in stepping down involving his left foot. This is documented a day after he received his forth and last dose during this hospitalization.

His weakness got worse, he was only able to be out of bed walking with assistance, and then with physical therapy and time, he was able to walk with the use of a quad cane. This is a cane with four feet at the bottom that helps stabilize the patient when walking. Even by August 22, the nurses' notes show that the patient still had some weakness in his legs and slight numbness in his fingertips.

In my opinion, the drug Phenergan, which is used for nausea and vomiting, for some tranquilization, and to increase the effectiveness of narcotic medication, was not the cause of this weakness. Sometimes Phenergan is negligently injected directly into the sciatic nerve behind the hip area. This causes severe shooting pain down the leg and can cause some paralysis, particularly a foot drop type situation. But that is not the situation here since the patient developed symptoms involving both legs, and there is no evidence that he received Phenergan injections negligently into the sciatic nerves involving both legs. Furthermore, the symptoms involving his fingertips and the nature of the progression of the condition would be consistent with vincristine toxicity secondary to the overdosage he received four times.

According to the records, including the two bone marrow samples, the patient did have some remission from the forms of chemotherapy, which included the drug methotrexate, given into the spinal fluid sac.

In my opinion, except for the four negligent overdosages of using vincristine at the level of 4 milligrams instead of 2 milligrams, the patient did receive proper medical care.

I have not seen any of the outpatient records, nor the electro-myogram and nerve conduction studies if they were done, nor any of the subsequent records from other hospitalizations. Furthermore, I do not know if the patient received any further treatment with the drug vincristine.

According to the daughter's deposition, apparently the patient developed infection, and that may have been the proximate cause of his death secondary to his leukemia, or possibly contributed to by anti-cancer drug therapy of which I have not seen any subsequent records.

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I have discussed this case with one of our Oncology (chemotherapy) Experts, and he agreed that the dosage was excessive and is known to cause this type of problem.

It would be helpful to see subsequent hospitalization records and any outpatient records referring to his chemotherapy and his neurologic condition. Since I have not seen the final records, I do not know whether or not his death was related to any substandard care, or was a consequence of recurrent leukemia and related infection.

If he did receive vincristine another year, it would be important to see the dosage level that he received at that time, as well as the potential for alternative drug (anti-cancer) therapies.