

TRANSFUSION COMPLICATED BY SHOCK

Case study by Jim Perkins, M.D. (©2009)

W.P. was a 78 year old man who presented with a toothache and sinusitis in early September, and a dental abscess was drained. He also noted increasing dyspnea on exertion beginning in late August. A "routine" CBC on two weeks after the drainage revealed pancytopenia, and he was referred to the emergency room.

His past history was remarkable for adenocarcinoma of the lung, removed 4 years earlier; he did not receive adjuvant chemo- or radiotherapy. Other problems included hypertension, hypothyroidism, and hyperlipidemia. He gave a history of allergy to penicillin, manifested by immediate skin rash. He had worked as a chemist at CIBA-Geigy.

Admission laboratory work included the following:

Hemoglobin = 7.4, hematocrit = 21.1, 43,890 reticulocytes/ μ L
WBC = 2,100/ μ L, Differential: 15 P, 6 B, 6 metas, 6 myelos, 2 pros, 1 blast, 51 L, 6 M, 3Eos.
Plts = 74,000/ μ L
PT/PTT = 12.6/32 sec

Total/dir bili = 1.7/0.4, liver enzymes normal, LDH = 303
Electrolytes, BUN and creatinine normal, Ca = 8.8 (nml 8.5-10.5)
Total protein = 8.0 gm/dL, albumin = 4.5 gm/dL
SPEP showed a monoclonal spike in the gamma region
IgG = 2230 (723-1685), IgA = 121 (69-382), IgM = 117 (63-277)

Bone marrow biopsy demonstrated multiple myeloma and erythroleukemia. A skeletal survey failed to reveal typical bone lesions of myeloma.

The patient was transfused 3 units of RBCs over the first 2 days in the hospital, and combination chemotherapy was started on the 7th hospital day. On the same day he was noted to have a low grade fever, felt possibly to be due to recurrent sinusitis, and Ciprofloxacin was started. The usual severe pancytopenia developed, and over the next 2^{1/2} weeks he received an additional 6 units of RBCs and 4 units of Platelets, Apheresis. He developed high fever on the 12th day and severe diarrhea; ceftazidime and vancomycin were started, although no specific organisms were ever isolated. His fever persisted.

On the 23rd hospital day hemorrhagic skin nodules were noted, felt possibly to be due to disseminated fungal infection, so amphotericin was ordered. After pretreatment with diphenhydramine 50 mg, a total dose of 1 gram of amphotericin was given over about 40 minutes. This was followed by an additional dose of diphenhydramine, 25 mg, and then 20 minutes after the end of the amphotericin infusion, a unit of apheresis platelets was started (the platelet count was 11,000/ μ L).

Immediately ("3-5 seconds") after the unit was started the patient became flushed and complained of dyspnea and a sense of tightness in his throat, and then lost consciousness. A "code" was called. He was immediately resuscitated with epinephrine, 1^{1/2} L of saline and diphenhydramine. During the urgent resuscitation the blood pressure was never documented. The patient was transferred to the CCU where a chest X-ray demonstrated pulmonary edema and mild cardiomegaly (the latter had been present throughout the hospitalization).

QUESTIONS:

1. What is your differential diagnosis?
2. What course of action would you suggest?

CASE HISTORY CONT'D:

The following day the patient was pretreated with 50 mg of diphenhydramine and 40 mg of IV solumedrol. With the epinephrine at the bedside, a new unit of apheresis platelets was started, with an initial test dose. Immediately on initiating the infusion (2mL administered) the patient developed flushing and dyspnea. The respirations rose to 40/min and the BP dropped to 60/40. There was no fever. He responded to 4 mg of epinephrine.

QUESTIONS:

3. Does this establish a diagnosis?
4. How would you provide safe platelet transfusions for the patient?

CASE HISTORY CONT'D:

A unit of apheresis platelets was prepared, washed once, and then resuspended in saline. This was transfused without incident. The platelet count increased from 7,000 to 17,000.

Amphotericin was continued without further problems. His white count recovered on the 28th hospital day and his platelet count rose above 20,000 on 31st day. He was discharged on the 35th hospital day.