

Visualization

A Critical Care Unit

My story occurred in the late winter. I was still an intern and quite green, but this code blue was not my first. I was actually beginning to feel more comfortable with code blues, which was good because in a few months I would be the senior resident and running the codes myself.

The hospital was near capacity that night, and the adjacent children's hospital was overflowing. I was on call with one of my favorite senior residents when I was awakened from sleep as soon as I had drifted off. The code was in the critical care unit, and I had to run a long way to get there. I knew that the senior resident would be there because the residents' room is adjacent to the unit.

When I arrived from my marathon run I was expecting to see the usual cohort of ancillary staff. I also expected to see a frail old man who had probably had two or three prior myocardial infarctions and was on his deathbed. To my surprise, when I pulled back the curtain I found a 16-year-old boy undergoing full cardiopulmonary resuscitation. I was shocked!

The children's hospital, which is actually attached to the main hospital, was so full that the children's staff had begun using our intensive care and critical care beds. I was certainly not expecting to see this patient. For a minute or two, I couldn't think straight. I had never treated a patient younger than the age of 28 before this moment.

This patient had diabetes and was admitted for diabetic ketoacidosis. The monitor showed a normal sinus rhythm but the patient had no pulse, so the staff was following the standard advanced cardiac life support protocol for pulseless electrical activity. After I had managed to pull my thoughts together, I started reviewing the differential diagnoses for pulseless electrical activity: hypovolemia, hypoxia, tamponade, pneumothorax, pulmonary embolism, massive myocardial infarction, hyperkalemia, drug overdoses, and acidosis.

As the code progressed, we tried to narrow the differential diagnosis. The patient's oxygen status was good so he was not hypoxic. We were pushing fluids and had no reason to suspect an internal bleed or hypovolemia. He had good bilateral breath sounds so we did not suspect a tension pneumothorax. We also

doubted a myocardial infarction. His potassium value was slightly high but not high enough to cause this presentation.

Just then the patient went into ventricular fibrillation. We immediately switched protocols and started a series of direct current shocks and epinephrine. This course of action brought the patient back to normal sinus rhythm with a pulse, but that state was brief and transient at best. This sequence continued for quite some time—the patient alternated between normal sinus rhythm with a pulse, pulseless electrical activity, ventricular fibrillation, and back to normal sinus rhythm with a pulse again.

We were very aggressive in our treatment; we refused to give up on this young boy. The code had gone on for approximately 45 minutes when the senior resident and I observed the arterial blood pressure tracing while the patient was in normal sinus rhythm. The pressure was cycling with every respiration. We immediately ordered an echocardiogram. The hospital had a full armamentarium of in-house ancillary staff 24 hours a day, so this test only took a few minutes.

To everyone's amazement, there was the diagnosis right before our eyes: the biggest pericardial effusion I had ever seen. Just then an attending cardiologist arrived. With his help we started an emergent pericardiocentesis. The fluid was light brown and had a sandy appearance—it was definitely infected. The senior resident had withdrawn almost two tubes of 100 cc of fluid when the patient went back into ventricular fibrillation. We withdrew the needle and again started the advanced cardiac life support protocol. Unfortunately, the patient did not survive the protocol this time and we called the code some time later.

I was quite saddened by this experience, and I will never forget this code. I learned through this code to expect the unusual in diabetic patients. Also, I will never forget that a cycling pulse with every inspiration/expiration on the arterial blood pressure monitor is the ultimate visualization of *pulsus paradoxus*.

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