

Incidental Echocardiogram Finding in Asymptomatic Bone Marrow Transplant Patient---How Do You Proceed?

Introduction: Central venous access is necessary in many chronically and acutely ill patients. Risks include infection, thrombosis, and mechanical complications. Our case describes the incidental discovery of a central venous catheter-related right atrial thrombus in a young adult patient undergoing stem cell transplantation for acute myeloid leukemia (AML). While this complication is not unheard of, our patient presented a unique situation given she was undergoing transplantation at the time the thrombus was discovered and it was resistant to the few treatment options available to her.

Case description: The patient is a 22-year-old female with a history of HbSS status post haploidentical transplant who subsequently developed AML necessitating a second transplant. She underwent induction chemotherapy before transplant and was followed with serial echocardiograms. Lisinopril was started given mildly depressed systolic function (shortening fraction 14%) and within a month her function was normal (shortening fraction 36.5%). Our patient was then able to undergo transplant. Post-transplant she developed severe mucositis. She experienced sedation and dizziness on her pain medications and lisinopril was discontinued given it could contribute to the dizziness. A week later, our patient had an echocardiogram to evaluate her systolic function. It showed preserved systolic function, however a mass measuring 1.5 cm x 1.2 cm was noted in the right atrium and thought to be associated with her central line. At this time, the patient was asymptomatic from a cardiac standpoint and her physical exam was unchanged. However, days later she became persistently febrile and central line culture was positive for *Bacillus cereus*. She was treated with vancomycin and meropenem; gentamycin was started after a subsequent lumen of the line was positive for *B. cereus*. It was not clear what the right atrial mass was at this point. She had risk factors for catheter-related thrombus (presence of foreign body in the atrium and hyper-coagulable state), she did not meet criteria for infective endocarditis, and the mass was not consistent with an atrial myxoma; therefore, we concluded that she had a catheter-related right atrial thrombus. Removal of the catheter was impracticable as she required intravenous nutrition, daily labs, and blood products, so we explored other options. Unfortunately systemic thrombolysis and thrombectomy were not options. Systemic thrombolysis was not an option as she was still transfusion dependent and thrombectomy was not an option given she was a poor surgical candidate as she was malnourished, had medical renal disease, was septic, and had daily transfusion requirements. We therefore proceeded with targeted thrombolysis with continuous infusion of tPA at 0.05 mg/kg/hr. Unfortunately, the clot failed to dissolve and the size of the thrombus was unchanged. We decided to observe her with serial echocardiograms after removing her central line and replacing it. Nearly 1 year after the thrombus appeared, it remains stable with no interval growth.

Discussion: Although catheter-related thrombus in the right atrium is not an uncommon complication of central venous access, our patient presented us with a unique challenge with regard to diagnosis and management. For one, she was completely asymptomatic when the thrombus was discovered. She then developed fevers and positive blood cultures from her central line which made her diagnosis challenging. With regards to treatment, options were limited for the reasons previously mentioned. Per literature review, treatment options include: conservative management, thrombolysis, anticoagulation, and surgery. Even conservative management (simply discontinuing the line) was not without risks given our patient's dependence on central access. Systemic anticoagulation has been mentioned as the first-line treatment, however after discussion with our hematologist, it was determined to not be an option for our patient. Surgical thrombectomy is another option, however is usually reserved for patients with thrombus size > 60mm; regardless of size, our patient was a very poor surgical candidate. Finally, targeted thrombolysis has been studied and we decided to proceed with this before moving forward with line removal. Unfortunately, after 48 hours, the thrombus was unchanged in size. Given all treatment options had either failed or were not feasible, the Broviac was replaced and she remained on triple antibiotic coverage. After replacing the catheter, the thrombus remained in place and unchanged in size. Her fevers did dissipate, however. We chose to simply observe our patient with serial echocardiograms after discharge and over one year later there has been no change in size or embolization of the thrombus. We present a unique situation surrounding the discovery of a right atrial thrombus and demonstrate that in patients in which the studied treatment options are contraindicated or fail, close observation is a feasible option. Given the large proportion of patients with central venous access are either chronically and/or acutely ill and right atrial thrombus is a not uncommon complication, this case is likely applicable to a larger population than presented in the literature.