

Thrombocytopenia from an electron-beam sterilized dialyzer in a hemodialysis patient

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We describe a case of electron-beam sterilized dialyzer induced thrombocytopenia. A 68 year old man with end-stage renal disease on hemodialysis for 2 years was admitted to our hospital with exacerbation of chronic obstructive pulmonary disease, prolonged post-dialysis bleeding from his arteriovenous-fistula and thrombocytopenia (platelet count 70,000/mm³). The day after receiving routine hemodialysis, his platelet count declined to 18,000/mm³. Review of past medical history showed that the patient had been thrombocytopenic (platelet count <100,000/mm³) since starting hemodialysis two years ago. Workup for SLE and other autoimmune diseases, HIV, Hepatitis C, Heparin-induced thrombocytopenia was negative. Bone marrow biopsy was unrevealing. Prior to this admission contributing medications such as aspirin, clopidogrel and heparin had been discontinued without improvement of thrombocytopenia. The precipitous fall in platelet count after dialysis raised suspicion of the dialysis process contributing to thrombocytopenia. It was decided to switch his dialyzer from Fresenius Optiflux F160 NR (polysulfone, electron-beam sterilized) to Baxter CA-210 (cellulose acetate, ethylene oxide sterilized). No decrease in post-dialysis platelet count was seen with the alternate dialyzer and prolonged post-dialysis bleeding resolved. The patient was discharged and the platelet count continued to improve towards normal levels with Baxter CA-210. A few months later the patient was again admitted to the hospital and inadvertently challenged with F160 NR (electron-beam sterilized) dialyzer, and a pattern of thrombocytopenia similar to the previous episode was seen. There had been no changes in the patient's chronic antiplatelet regimen (aspirin and clopidogrel) or heparin use. At this point he was switched to Fresenius Optiflux F160 NR (ethylene oxide sterilized) which is made up of a similar material but sterilized by a different method. Platelet count again improved. Hence it was proven that it was the method of sterilization (electron-beam) and not the material of the dialyzer (polysulfone) that was responsible for his thrombocytopenia. The exact mechanism by which the type of dialyzer sterilization may cause thrombocytopenia is not known, but it is postulated that it may alter the surface properties of the dialysis membrane, as for example, increased hydrophilicity of polysulfone membranes was seen after electron-beam sterilization. Nephrologists should be aware that not only the type of dialysis membrane, but the method of sterilization may be responsible for a potentially reversible dialysis associated thrombocytopenia.

Biography

Reza A. Ali completed medical education from Ayub Medical College, Abbottabad, Pakistan in 2005. He went to University of Oklahoma Health Sciences Center, Oklahoma city for Internal Medicine residency from 2008 to 2011. He is currently a Nephrology Fellow at Saint Louis University Hospital, Saint Louis, Missouri.

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