Successful use of Protamine Post Cardiopulmonary Bypass in a patient with Fish Allergy undergoing VSD Repair.

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Introduction: Immunologic reaction is a known adverse effect of protamine especially in cardiac patients with history of NPH insulin use, post vasectomy and those fish allergy. We present a case of a successful intraoperative management of a patient with history of fish allergy and severe Hemophilia A undergoing Repair of Ventricular Septal Defect

Case:
Patient is a 22 year old African American male with history of Hemophilia A, VSD Aneurysm with left-to-right shunt who presented for VSD repair. Patient was incarcerated and has been admitted on several occasions for hemoptysis stemming from poor management of hemophilia A while in incarceration. He had also been previously treated for endocarditis. Review of other pertinent history revealed a significant allergy to fish. The exact nature of the fish allergy was described as severe bronchoconstriction associated with swelling of the throat. Transesophageal echocardiography 2 D image showed a large 2.2 cm VSD with aneurysmal tissue separating it from the right ventricle. The aneurysm appeared perforated with a significant left to right shunt on color flow doppler. The TEE also showed moderate to severe left ventricular concentric hypertrophy, significant TR and elevated PA systolic pressures. In light of his fish allergy, there was an increased risk of severe adverse reaction to protamine use in reversing anticoagulation following cardiopulmonary bypass. We decided to use heparin for anticoagulation with the specific aim of using the lowest amount of protamine for reversal of heparin post bypass. In lieu of significant h/o fish allergy and our need to use protamine post CPB to reverse heparin anticoagulation, we administered Benadryl, H-2 blocker and methylprednisolone pre bypass. The patient underwent a successful VSD repair. We administered 10 mg of protamine as the initial test dose post bypass. We waited for 10 minutes to exclude any signs of protamine reaction before we administered one third the total protamine dose over 30 minutes post bypass. We were able to accomplish complete reversal of heparin anticoagulation with this reduced dose of protamine as reflected by an ACT of 140.

Discussion
The exact mechanism by which a fish allergy increases risk of adverse reaction to protamine is not well elucidated. Almost all the reported cases of adverse protamine reaction have been reported in patients with allergy to vertebrate fish. An allergy to shell fish has been shown not to predispose to adverse protamine reaction. Cardiac patients with true allergy to vertebrate fish who are scheduled for cardiac surgery may benefit from skin test preoperatively to access the potential risk of adverse events. We did not have the opportunity to do a skin test prior to the surgery. Neither are there any definitive guidelines on reversal of anticoagulation with protamine in patients who have a true fish allergy.

References