

Leukocyte-Aprotinin Atrial Fibrillation Study (LAFFS): Impact of Aprotinin and Leukofiltration on Atrial Fibrillation, Renal Insufficiency and Encephalopathy Post-Cardiopulmonary Bypass

*Presented at the Therapeutic Filtration and Extracorporeal Circulation Meeting 2006 at Imperial College, London**

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Abstract

Purpose: Atrial fibrillation remains the leading postoperative complication following cardiopulmonary bypass. A randomized trial was undertaken to evaluate the effectiveness of leukocyte filtration and aprotinin, applied separately and in combination, on the incidence of post-operative atrial fibrillation. Also studied was the impact of these adjunct interventions on post-surgical renal and neurological dysfunction.

Methods: A total of 1,220 patients undergoing primary isolated coronary artery bypass grafting were randomly assigned to one of four treatment groups. The control group (305 patients) received standard cardiopulmonary bypass with moderately hypothermic (34°C) cardioplegic arrest. In the filtration group (310 patients) leukocyte reducing filters were incorporated into the bypass circuit. The aprotinin group (285 patients) received full Hammersmith dose aprotinin. The combination therapy group (320 patients) received both aprotinin and leukocyte filtration.

Results: The incidences of atrial fibrillation were 25% in the control group, 16% in the filtration group, 19% in the aprotinin group and 10% in the combination therapy group ($P < 0.001$). Renal dysfunction was detected in 3% of the control group, 2% of the filtration group, 8% of the aprotinin group, and 5% of the combination group ($P < 0.005$). Neurological dysfunction occurred in 2% of the control group, 2% of the filtration group, 1% of the aprotinin group, and 2% of the combination group ($P = n.s.$).

Conclusions: Combination therapy with aprotinin and leukocyte filtration markedly reduced atrial fibrillation post-cardiopulmonary bypass, and was more effective than the individual treatments. Aprotinin treatment increased the incidence of renal dysfunction, and the addition of leukocyte filtration partially mitigated this detrimental effect of aprotinin.

Key words: aprotinin, atrial fibrillation, cardiopulmonary bypass, encephalopathy, leukofiltration, renal failure

**A full text article will be published in a forthcoming issue of FILTRATION.*