with bicuspid aortic valves excluded from the study? Did patients with Gothic arches and bicuspid valves have even greater changes? Did any of the patients with Gothic arch and a tricuspid aortic valve have aortic insufficiency or require valve replacement/repair?

Approximately 15% of patients who are status-post repair of type I aortic dissection require replacement of the proximal descending aortic owing to increasing diameter on long-term follow-up. It has also been my impression that those patients who have repair of type I aortic dissection with replacement of the ascending aorta and hemiarch repair have a greater incidence of progressive aortic insufficiency and may require aortic valve replacement or aortic root replacement. This cohort is in contrast to those patients with type I aortic dissection who simply had ascending aortic replacement and appeared to have a lesser incidence of aortic insufficiency and valve or root replacement over the long term.

Might the hemodynamic changes that were documented in the pediatric angular Gothic arch be present in this status-post aortic dissection group and predispose to aortic valve insufficiency and dilation of the proximal portion of the distal descending thoracic aorta? Might this effect be more pronounced in the hemiarch repair that predisposes to an angular Gothic arch configuration? Replacement of the ascending aorta only (without hemiarch repair) usually preserves the concave configuration of the ascending aorta and its gentle curve into the transverse arch. Ascending aorta and hemiarch replacement typically has an angulated Gothic configuration rather than the gentle curve that nature favors.

Frank A. Baciewicz, Jr, MD
Professor of Cardiothoracic Surgery
Wayne State University
School of Medicine
Detroit, MI 48201

Reference

1. Ou P, Celermajor DS, Raisty O, Jolivet O, Buyens F, Herment A, et al. Angular (Gothic) aortic arch leads to enhanced systolic wave reflection, central aortic stiffness, and increased left ventricular mass late after aortic coarctation repair: evaluation with magnetic resonance flow mapping. *J Thorac Cardiovasc Surg.* 2008;135:62-8. doi:10.1016/j.jtcvs.2008.03.058

Aprotinin and renal dysfunction: The role of exposure to angiotensin-converting enzyme inhibitors

To the Editor:

I read with great interest the recent article by Pagano and colleagues¹ detailing their favorable experience with aprotinin in a large patient series (N = 7836: 1998–2006) from a single institution. The authors demonstrated that aprotinin exposure did not significantly affect the incidence of postoperative renal dysfunction.

Careful review of this interesting paper reveals, however, that although hypertension was significantly more common in the aprotinin cohort (63.3% vs 55.1%; $P < .001$), the incidence of exposure to angiotensin-converting enzyme (ACE) inhibitors is not indicated. This is an important confounder, inasmuch as ACE inhibitors in conjunction with aprotinin have been shown to be associated with renal dysfunction after cardiac surgery.^{2,3}

As a consequence of this observation, I have the following questions:

1. What was the incidence of ACE inhibitor therapy in the aprotinin cohort?
2. Was exposure to ACE inhibitors significantly different in the aprotinin cohort?
3. What was the percentage of off-pump coronary bypass procedures, given that aprotinin and ACE inhibitors have recently been significantly associated with postoperative renal dysfunction in this patient subgroup?³
4. Could the incidence of ACE inhibitor exposure have confounded the results of the study, given the findings from the literature?^{2,3} For example, could a lack of renal toxicity from aprotinin be explained by a low incidence of exposure to ACE inhibitors in the aprotinin cohort?

I congratulate the authors again on their important contribution. I look forward to their feedback about the impact of ACE exposure and aprotinin on renal dysfunction after cardiac surgery.

John G. T. Augoustides, MD, FASE
Associate Professor
Department of Anesthesiology and Critical Care
Hospital of the University of Pennsylvania
Philadelphia, PA 19104-4283

Financial support: Department of Anesthesiology and Critical Care, Hospital of the University of Pennsylvania.

References

1. Pagano D, Howell NJ, Freemantle N, Cunningham N, Bonser RS, Graham TR, et al. Bleeding in cardiac surgery: the use of aprotinin does not affect survival. *J Thorac Cardiovasc Surg.* 2008;135:95-502.
2. Kincaid EH, Ashburn DA, Hoyle JR, Reichert MG, Hammon JW, Kon ND. Does the combination of aprotinin and angiotensin-converting enzyme inhibitor cause renal failure after cardiac surgery? *Ann Thorac Surg.* 2005;80:1388-93.
3. Mouton R, Finch D, Davies I, Binks A, Zacharowski K. Effect of aprotinin on renal dysfunction in patients undergoing on-pump and off-pump cardiac surgery: a retrospective observational study. *Lancet.* 2008;371:475-82. doi:10.1016/j.jtcvs.2008.03.069

Reply to the Editor:

Dr Augoustides raises an appropriate point. It is the policy in our unit to discontinue angiotensin-converting enzyme inhibitors or equivalents 24 hours before the operation and for patients with impaired renal function, at least 48 hours before the operation. However our database does not have information on compliance to this policy. Therefore, we could not address this issue in our article.¹

Domenico Pagano, MD, FRCS, FESC
Department of Cardiothoracic Surgery
University Hospital Birmingham
Edgbaston
Birmingham, West Midlands, United Kingdom

Reference

1. Pagano D, Howell NJ, Freemantle N, Cunningham D, Bonser RS, Graham TR, et al. Bleeding in cardiac surgery: the use of aprotinin does not affect survival. *J Thorac Cardiovasc Surg.* 2008;135:495-502. doi:10.1016/j.jtcvs.2008.05.035

Prosthetic valve thrombosis: A regimen of treatment with low-dose and longer-course using recombinant tissue-type plasminogen activator is a promising protocol

To the Editor:

Despite the progress in anesthesia, cardiac surgery, and perioperative care, the therapeutic decision in prosthetic valve thrombosis (PVT) remains in discussion.

In recent years thrombolytic therapy has won acceptance, and for many it is the first