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Re: Ruiz-Bailen M, Lopez-Caler C, Castillo-Rivera A, et al. Giant right atrial thrombi treated with thrombolysis. *Can J Cardiol* 2008;24(4):312-4.

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### Right heart thrombi: Consider the cause

Ruiz-Bailen et al (1) are commended for documenting their experience managing two patients with right heart thrombi. They suggest that surgery offers the safest options for patients with giant right heart thrombi. Current evidence to support therapeutic decisions for patients with right heart thrombi is based on analyses of isolated case reports or case series (2). Prospective case series and registry data also provide some insight (3-5).

Right heart thrombi are diagnosed by echocardiography. In 1989, the European Working Group on Echocardiography identified three patterns of right heart thrombi (6). Type A thrombi are morphologically serpiginous, highly mobile and associated with deep vein thrombosis and pulmonary embolism. It is hypothesized that these clots embolize from large veins and are captured in-transit within the right heart. Predisposing factors include prominent eustachian valves (7), tricuspid regurgitation, low cardiac output and pulmonary hypertension (8). Type B thrombi are nonmobile and are believed to form

in situ in association with underlying cardiac abnormalities. Type C thrombi are rare, share a similar appearance to a myxoma and are highly mobile.

The prevalence of a right heart thrombus in the setting of an acute pulmonary embolus is 4% to 18% (4). The overall mortality for type A thrombi is 28% to 44% (2,3,6,9). Although the prevalence of type B thrombi is unknown, they portend better outcomes than type A thrombi (6,9,10). Others have previously cautioned against the use of thrombolytic agents in type B thrombi (10). Thrombolytic agents may dissolve the adherent stalk and actually promote distal embolism of these organized thrombi (10). Conversely, a prospective case series (4) reported favourable in-hospital survival for patients with type A thrombi treated with thrombolytics.

Ruiz-Bailen et al described failure of thrombolysis in two patients with giant right atrial thrombi (presumably type B or C). Thrombolytics may prove to be lifesaving for patients with acute pulmonary embolism complicated by a type A thrombus. Without treatment, mortality is reported to be 100% (2). Because distal propagation of type A thrombi occurs early, thrombolytics are invaluable, particularly at centres without immediate access to cardiac surgery.

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### Note from the Editor:

We have tried unsuccessfully to contact the authors for a response to the comments in this letter.