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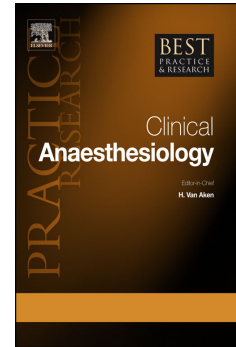
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3. Acute Aortic Syndrome: A systems approach to a time critical disease?

Acute Aortic Syndromes

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Abstract

Acute aortic syndrome describes a group of potentially lethal aortic diseases, including classic acute aortic dissection, intramural hematoma and penetrating atherosclerotic aortic ulcer. Among these conditions, Type A aortic dissection is the most common acute presentation. Only surgical interventions are recommended in guidelines as lifesaving procedures for type A dissection. Despite new diagnostic imaging methods, advanced surgical strategy and improved post-operative management in over 250 years of history of aortic dissection, in-hospital mortality and morbidity rates still remains high.

Recently, several new system-based approaches were reported to improve the outcome, such as multidisciplinary experienced high volume center implementation and regional systematic management flow establishment. We will describe the pathophysiology, diagnosis and treatment as well as the new systematic approach to treat acute aortic syndrome.

Definition of Acute Aortic Syndrome

Acute aortic syndrome (AAS) is a modern term coined by Vilacosta¹ in 1998, which includes classic aortic dissection (AD), intramural hematoma (IMH), and symptomatic penetrating aortic ulcer (PAU).

AD is the most common acute aortic condition requiring urgent surgical intervention.

An acute aortic dissection is caused by a tear in the aortic intima exposing the underlying diseased medial layer to the pulsatile blood pressure within the aortic lumen. Blood passes through the tear separating the intima from the media or adventitia, creating a false lumen. The dissection can proceed in anterograde or retrograde directions from the initial tear, potentially involving side branches. This may cause complications such as aortic valve regurgitation, cardiac tamponade or malperfusion syndromes including coronary artery / mesenteric ischemia, which are the most common causes leading to mortality.

Aortic IMH is considered a precursor of aortic dissection and originates from ruptured vasovasorum within the media wall, resulting in aortic wall infarction. This may cause a secondary tear and lead to acute dissection of the aorta. IMH is commonly located in

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