

3rd International Meeting on Aortic Diseases

New insights into an old problem

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Clinical management and treatment of thoracic aortic diseases

Evolution of IMH

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Intramural hematoma

1. Acute aortic syndrome (mid 80') "emergent clinical condition characterized by disruption of the aortic media layer"

5-20% of all AAS



Clinically undistiguishable from aortic dissection or PAU



2. "Dissection without intimal tear" (Krukenberg 1920)

Acute Intramural Hematoma of the Aorta A Mystery in Evolution

Arturo Evangelista, MD; Debabrata Mukherjee, MD; Rajendra H. Mehta, MD;
Patrick T. O'Gara, MD; Rossella Fattori, MD; Jeanna V. Cooper, MS; Dean E. Smith, PhD;
Jae K. Oh, MD; Stuart Hutchison, MD; Udo Sechtem, MD; Eric M. Isselbacher, MD;
Christoph A. Nienaber, MD; Linda A. Pape, MD; Kim A. Eagle, MD; for the International Registry of Aortic Dissection (IRAD) Investigators*



Different evolution of IMH



Evolution of IMH

Who causes what?

Predictor factors of



- Age, sex
- Wall Thickness
- Atherosclerotic plaque
- Aortic diameter
- ULP
- Location of IMH
- Medical therapy

Predictors of IMH evolution

LIMITATIONS

Single center studies

Distinction of IMH type

Overlapping of imaging features and diseases (difficult disease attribution)







Ao D/PAU? Saccular aneurysm/ Pseudoaneurysm?

Location: Type A IMH

Mortality according to site of origin of IMH High mortality Risk of rupture



Nienaber CA, Heart 2004 Type A: predictor of acute progression

Evangelista A , Eur Heart J 2004 Ascending involvement: predictor of early mortality

Lee JK, J Comput Assist Tomogr 2007 Type A IMH predictor of late complications (24% aneurysms)

TABLE 10. Long-Term Follow-Up of IMH Patients Compared With Patients With Classic AD

	IMH (n=27)*	Classic AD (n=418)	Р
All IMH patients			
Death	7 (25.9)	66 (15.8)	0.18
New aneurysm or dissection	2 (7.4)	36 (8.6)	>0.99
New aortic insufficiency	0 (0.0)	13 (3.1)	>0.99
Acute hospitalization	2 (7.4)	44 (10.5)	>0.99
Type A only	n=8	n=256	
Death	3 (37.5)	33 (12.9)	0.08
New aneurysm or dissection	2 (25.0)	19 (7.4)	0.13
New aortic insufficiency	0 (0.0)	9 (3.5)	>0.99
Acute hospitalization	1 (12.5)	26 (10.2)	0.58
Type B only	n=19	n=162	
Death	4 (21.1)	33 (20.4)	>0.99
New aneurysm or dissection	0 (0.0)	17 (10.5)	0.22
New aortic insufficiency	0 (0.0)	4 (2.5)	>0.99
Acute hospitalization	1 (5.3)	18 (11.1)	0.70

Evangelista A, Circ 2005

Type A IMH

Ao diameter **>50mm**

Wall thickness > 12mm



Rapid progression to complications (impending rupture, aortic dissection, death)

Emergent surgery is recommended



INTERACTIVE CARDIOVASCULAR AND THORACIC SURGERY

Interactive CardioVascular and Thoracic Surgery 9 (2009) 868-871

www.icvts.org

Best evidence topic - Aortic and aneurysmal

In patients with acute aortic intramural haematoma is open surgical repair superior to conservative management?

Rizwan Attia, Christopher Young, Hazem B. Fallouh, Marco Scarci*

Department of Cardiac Surgery, St Thomas' Hospital, Westminster Bridge Road, London, SE1 7EH, UK

6 systematic review

Surgery reduces mortality rates

Asiatic populations: more favourable natural history?

Type A IMH





Type B IMH: predictors of evolution

Aortic diameter

Normal diameter in acute phase Best predictor of regression *Evangelista A, Circ* 2003









After 6 months >6cm

Type B IMH: predictors of evolution

Aortic ulcers: cause or consequence?



Ao ulcer originated by a severely atheromasic ao after IMH re-absorption

before

Ulcerated plaque predicts aneurysm formation in IMH on multivariate analysis *Evangelista A, Circ* 2003

After

Pre-exisiisting aortic ulcer, origin of the IMH?

ULP: ulcer-like projections

Images in Cardiovascular Medicine

Multislice Computed Tomography of Aortic Intramural Hematoma With Progressive Intercostal Artery Tears The Chinese Ring-Sword Sign

Ming-Ting Wu, MD; Tung-Ho Wu, MD; Doyal Lee, MD

New intimal tear? Collateral circulation of branch arteries? Small ulcers in IMH predictor of chronic evolution (aneurysm/pseudoaneurysm formation

Lee JK, J Comput Assist Tomogr 2007

Radiol med (2012) 117:789-803 DOI 10.1007/s11547-011-0779-1

VASCULAR AND INTERVENTIONAL RADIOLOGY RADIOLOGIA VASCOLARE E INTERVENTISTICA

MDCT findings of aortic branch artery pseudoaneurysms associated with type B intramural basepatoma

A consequence and not a cause of IMH

Better prognosis than ulcerated plaque (may disappear)





6 months later

Long-Term Follow-Up of Aortic Intramural Hematoma Predictors of Outcome

Arturo Evangelista, MD, FESC; Rosa Dominguez, MD; Carmen Sebastia, MD; Armando Salas, MD; Gaieta Permanyer-Miralda, MD; Gustavo Avegliano, MD; Cristina Elorz, MD; Teresa Gonzalez-Alujas, MD; Herminio Garcia Del Castillo, MD; Jordi Soler-Soler, MD, FESC

Circulation 2003

Pseudoaneurysm 24%

Saccular aneurysm 8%

Fusiform aneurysm 22%

Regression 34%

Classic dissection 12%



More frequent evolution: pseudoaneurysm

Our experience

Regression of IMH frequently associated with progressive aortic disease

On Projection Dist On Projection Min/

After

Evolution of IMH

What do we have learned?

High percentage of aortic disease progression in the first months after acute IMH

Need a strict follow-up with imaging test at 1,3,6,12 months (every 3 months in the first year)

> Absence of beta-blocker therapy predict late progression *Nienaber, Heart* 2004

But also clinical f-up

Type B IMH: when to treat

Signs of impending aortic rupture

Hemodynamic instability

Rapid aortic diameter evolution



Acute IMH-Ao7diameter 43-44mmdia

7 days later-Ao diameter 47-49mm

Surgical or endovascular?

Endovascular treatment of IMH

Issues

Severe and diffuse atherosclerosis

Atheromasic aortic necks

Aortic kinking

Vascular access

High risk of disease progression

Surgical management of progression to type A dissection from an intramural hematoma previously treated with endovascular stent graff placement

Carlo Savini, MD,* Filip Casselman, MD, PhD, Mehmet U. Ergenoglu, MD, Ivan Degrieck, MD, Franck Van Praet, MD, Raphael De Geest, MD, Francis Wellens, MD, Hugues Jeanmart, MD, and Hugo Vanermen, MD, Aalst, Belgium





Stent-Graft Treatment of Dissecting Aneurysm in Association With Aortic Intramural Hematoma: When Should the Procedure Be Performed?

Koichi Ide, MD; Kimihiko Kichikawa, MD; Hideo Uchida, MD; Takeshi Nagata, MD; Wataru Higashiura, MD; Shoji Sakaguchi, MD; Yasushi Kubota, MD; Kiyoshi Nishimine, MD; and Hajime Ohishi, MD

Treatment of IMH

Intramural Hematoma and Penetrating Ulcers: Indications to Endovascular Treatment

H. Eggebrecht*, B. Plicht, P. Kahlert, R. Erbel

Eur J Vasc Endovasc Surg 2009

Still debated the role of TEVAR

The challenge of associated intramural hematoma with endovascular repair for penetrating ulcers of the descending thoracic aorta

Himanshu J. Patel, MD,^a David M. Williams, MD,^b Gilbert R. Upchurch Jr, MD,^a Narasimham L. Dasika, MD,^b and G. Michael Deeb, MD,^a Ann Arbor, Mich

J Vasc Surg 2010

Elevated comorbidities often prevent the surgical approach

Delayed treatment (hemorragy reabsorption at the aortic necks)

Hybrid techniques