CHU | UVC
BRUGMANN

La dissection aortique

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Heelkunde
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Introduction

- Pathologies cardio-vasculaires causes fréquentes de mortalité dans pays développés
- Pathologies oartiques contribuent largement à ce haut taux de mortalité

Evolution

- Progrès en imagerie médicale : diagnostic
  - Précoce
  - Précis

→ Prise en charge améliorée

Physiopathologie

- Fragilité de la paroi aortique
- 3 pathologies héréditaires :
  1. Marfan 1/5 000
     - 25 % sporadiques
     - Fibrillin -1
  2. Ehlers-Danlos
     - 50 % mutations nouvelles
  3. Autres
     - Annulo-ectasie aortique
       - 5 à 10 % des iAo opérées
     - Anévrismes aortiques
       - abdominaux et dissections

Physiopathologie

- Rares : maladies aortiques de l'enfance et adolescence
- Majorité : vieillissement aortique

  Evolution naturelle : 1-2 mm/10 ans

Physiopathologie

Loi de Laplace

$$\sigma = p \times r/2h$$

σ	stress de paroi
p	pression
r	rayon
h	épaisseur

Etiologie des Anévrismes et Dissections

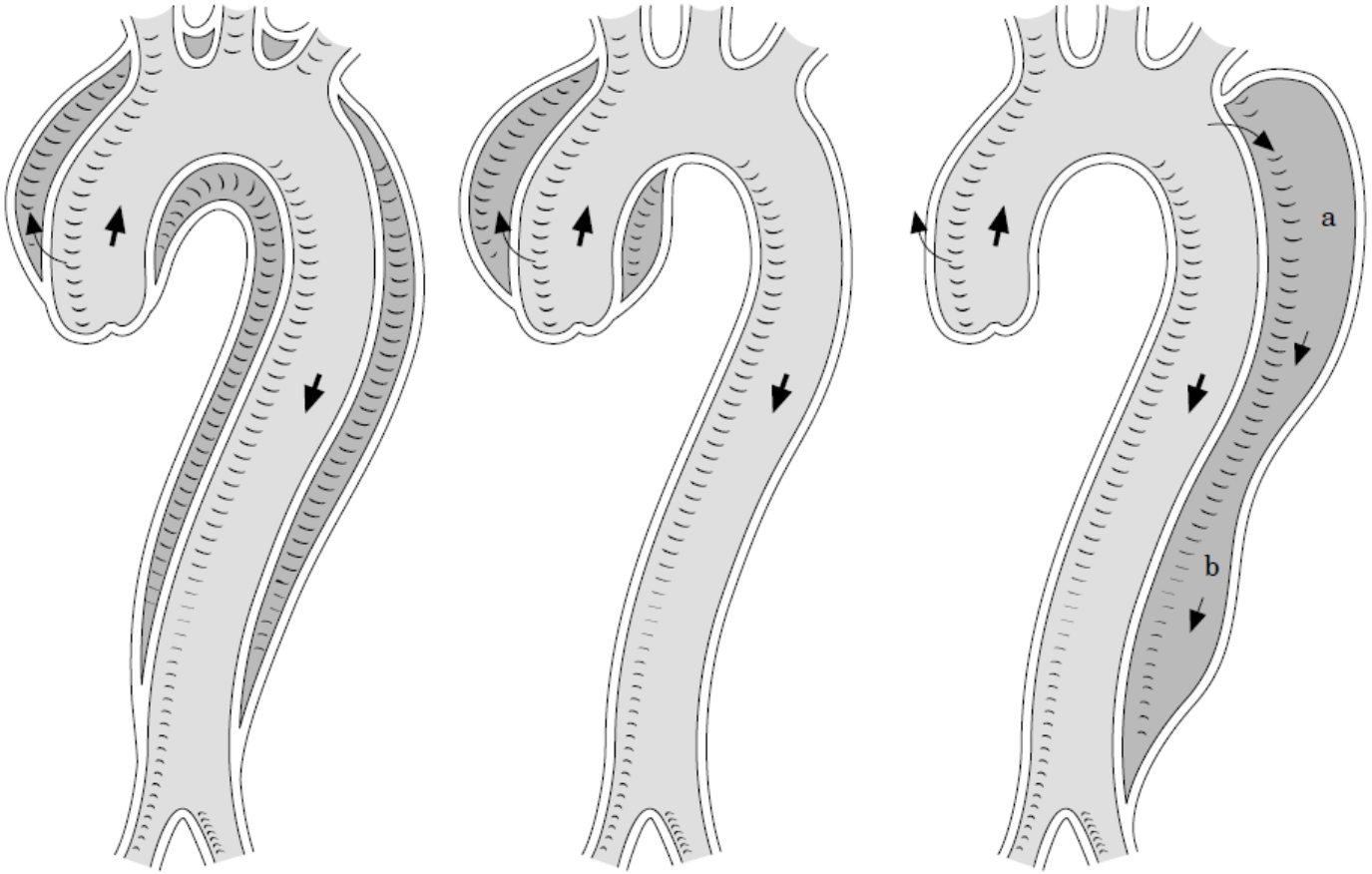
- Athérosclérose : première cause anévrisme
  - Intima et adventice atteintes
- Traumatismes à haute vélocité : 15-20 % décès d'origine aortique
- Chirurgie aortique et RCP
- Pathologies inflammatoires : aortites
  - Auto-immunes
  - Infectieuses
- Arthrite rhumatoïde
- Toxique ?

Sclérose aortique

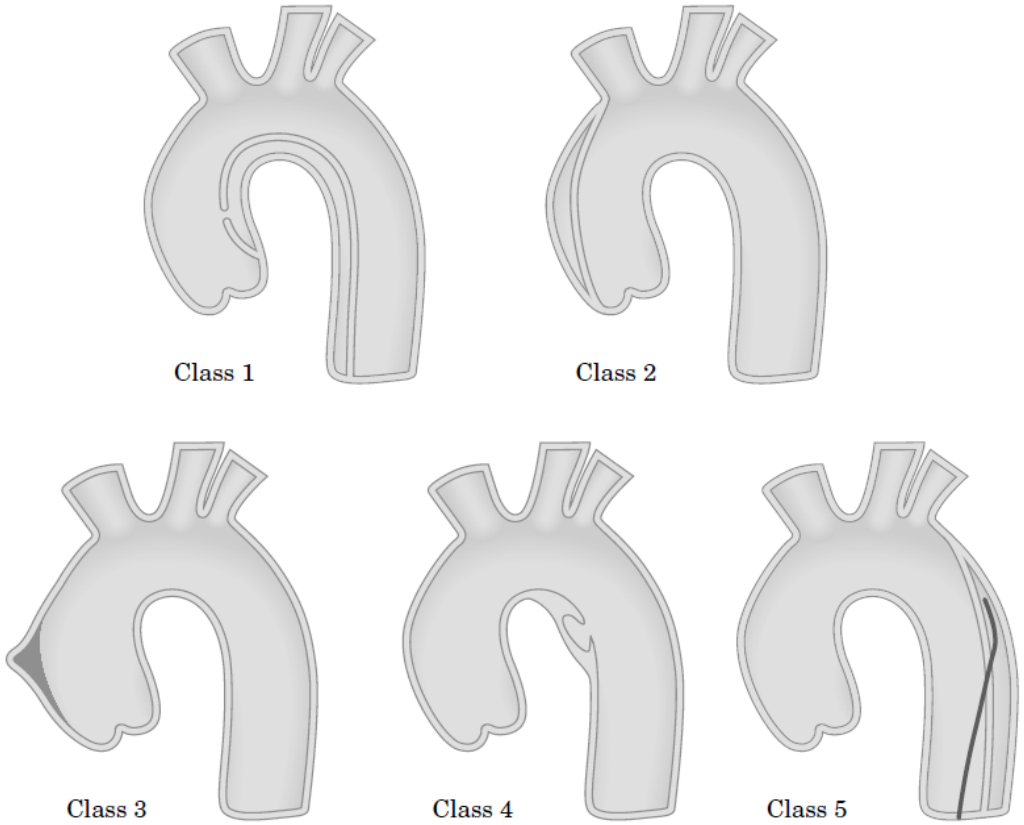
- HTA en est le principal risque
- Tabac
- Cholestérol

Classification Dissections

De Bakey	I	II	III
Stanford	A	A	B



Les dissections aortiques



Differentiation of classes 1–5 of aortic dissection. Class 1: classic aortic dissection with true and false lumen without communication of the two lumina; class 2: intramural haemorrhage or haematoma; class 3: ulceration of aortic plaque following plaque rupture; class 4: subtle or discrete aortic dissection with bulging of the aortic wall; class 5: iatrogenic or traumatic aortic dissection, illustrated by a catheter induced separation of the intima. (From Svensson LG, Labib SB, Eisenhauser AC, Butterfly JR. Intimal tear without haematoma. Circulation 99: 1331–6, 1999; American Heart Association; reproduced with permission.)

Tendance

Stanford classification

Type A — dissection of the ascending and descending aorta

Type B — dissection of the descending aorta

De Bakey classification

Type 1 — dissection of the entire aorta

Type 2 — dissection of the ascending aorta

Type 3 — dissection of the descending aorta

New classification

class 1: classical aortic dissection with an intimal flap between true and false lumen

class 2: medial disruption with formation of intramural haematoma/haemorrhage

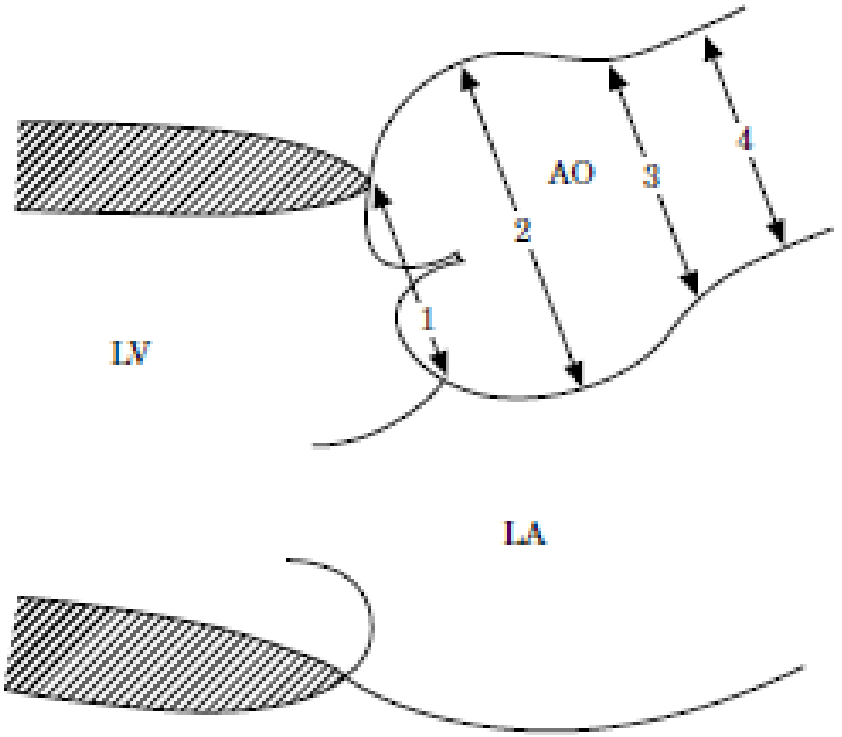
class 3: discrete/subtle dissection without haematoma, eccentric bulge at tear site

class 4: plaque rupture leading to aortic ulceration, penetrating aortic atherosclerotic ulcer with surrounding haematoma, usually subadventitial

class 5: iatrogenic and traumatic dissection

Class 1–5 represent a subdivision to the Stanford or De Bakey classification

Evaluation échographique



Symptômes

- Douleur Isolée
  - Avec syncope
  - Avec signes défaillance cardiaque
- Douleur avec AVC
- Défaillance cardiaque sans D^+
- AVC sans D^+

Cliniques

Diagnostic différentiel

- AMI
  - NSTEMI
  - STEMI
- iAo sans dissection
- Anévrisme aortique
- Douleur musculo-squelettique
- Péricardite
- Tumeur médiastin
- Pleurésie
- Embolie pulmonaire
- Cholécystite
- Embolie artérielle

Prise en charge

- Anamnèse : symptômes
- Examen physique : neurologique
  cardio-pulmonaire
  vasculaire
- RX thorax
- Labo

Prise en charge

Recommendation	Class I	II	III	Level of evidence
1. Detailed medical history and complete physical examination (whenever possible)	•			C
2. Intravenous line, blood sample (CK, TnT(I), myoglobin, WBC, D-dimer, haematocrit, LDH)	•			C
3. ECG: documentation of ischaemia	•			C
4. HR and blood pressure monitoring	•			C
5. Pain relief (morphine sulphate)	•			C
6. Reduction of systolic blood pressure using beta-blockers (i.v. propranolol, metoprolol, esmolol or labetalol)	•			C
7. Transfer to intensive care unit	•			C
8. In patients with severe hypertension additional vasodilator (i.v. sodium nitroprusside to titrate BP to 100–120 mmHg)	•			C
9. In patients with obstructive pulmonary disease, blood pressure lowering with calcium channel blockers		•		C
10. Imaging in patients with ECG signs of ischaemia before thrombolysis if aortic pathology is suspected		•		C
11. Chest X-ray			•	C

Examens complémentaires

- TEE
- CT Scan ?
- RMN ?

selon

- Disponibilité
- Expérience

TEE vs CT Scan vs RMN

Recommendation	Class I	IIa	IIb	III	Level of evidence
1. Transthoracic echocardiography followed by transoesophageal echocardiography	●				C
2. Computed tomography	●				C
● if detection of tears is crucial			●		C
3. Contrast angiography					
● to define anatomy in visceral malperfusion and to guide percutaneous interventions	●				C
● in stable patients		●			C
● routine preoperative coronary angiography				●	C
● in haemodynamically unstable patients			●		C
4. Magnetic resonance imaging		●			C
● in haemodynamically unstable patients				●	C
5. Intravascular ultrasound		●			C
● to guide percutaneous interventions			●		C

But imagerie

- Confirm diagnosis
- Classify the dissection/delineate the extent
- Differentiate true and false lumen
- Localize intimal tears
- Distinguish between communicating and non-communicating dissection
- Assess side branch involvement (including coronary arteries)
- Detect and grade aortic regurgitation
- Detect extravasation (periaortic or mediastinal haematoma, pleural or pericardial effusion)

Follow-up

Recommendation	Class I	IIa	IIb	III	Level of evidence
1. Magnetic resonance imaging	●				C
2. Transthoracic echocardiography followed by transoesophageal echocardiography		●			C
3. Computed tomography		●			C
4. Conventional angiography					
● to guide percutaneous interventions	●				C
● pre-operative diagnosis in selected patients		●			C
● for complete staging of the disease		●			C
5. Intravascular ultrasound					
● to guide percutaneous interventions		●			C

Comparaison

	TTE/TEE	CT	MRI	Angiography	IVUS
Sensitivity	++	++	+++	++	+++
Specificity	+++	++	+++	++	+++
Classification	+++	++	++	+	++
Tear localization	+++	–	++	+	+
Aortic regurgitation	+++	–	++	++	–
Pericardial effusion	+++	++	++	–	–
Mediastinal haematoma	++	+++	+++	–	+
Side branch involvement	+	++	++	+++	+++
Coronary artery involvement	++	–	+	+++	++
X-ray exposure	–	++	–	+++	–
Patient comfort	+	++	+	+	+
Follow-up studies	++	++	+++	–	–
Intra-operative availability	+++	–	–	(+)	(+)

TTE/TEE=transthoracic/transoesophageal echocardiography.
CT=computed tomography.
MRI=magnetic resonance imaging.
IVUS=intravascular ultrasound.

Attitude A

Recommendation	Class I	IIa	IIb	III	Level of evidence
1. Emergency surgery to avoid tamponade/aortic rupture	•				C
2. Valve-preserving surgery — tubular graft *if* normal sized aortic root and no pathological changes of valve cusps	•				C
3. Replacement of aorta and aortic valve (composite graft) *if* ectatic proximal aorta and/or pathological changes of valve/aortic wall	•				C
4. Valve-sparing operations with aortic root remodelling for abnormal valves		•			C
5. Valve preservation and aortic root remodelling in Marfan patients		•			C

Attitude B

Recommendation	Class I	IIa	IIb	III	Level of evidence
1. Medical therapy	•				C
2. Surgical aortic replacement *if* signs of persistent or recurrent pain, early expansion, peripheral ischaemic complications, rupture	•				C
3. Surgical or endovascular fenestration and stenting if persisting mesenteric, renal or limb ischaemia or neurologic deficits		•			C

Thérapie interventionnelle

Recommendation	Class I	IIa	IIb	III	Level of evidence
1. Stenting of obstructed branch origin for static obstruction of branch artery		•			C
2. Balloon fenestration of dissecting membrane plus stenting of aortic true lumen for dynamic obstruction		•			C
3. Stenting to keep fenestration open		•			C
4. Fenestration to provide re-entry tear for dead-end false lumen		•			C
5. Stenting of true lumen					
• to seal entry (covered stent)			•		C
• enlarge compressed true lumen		•			C

Traitement tardif

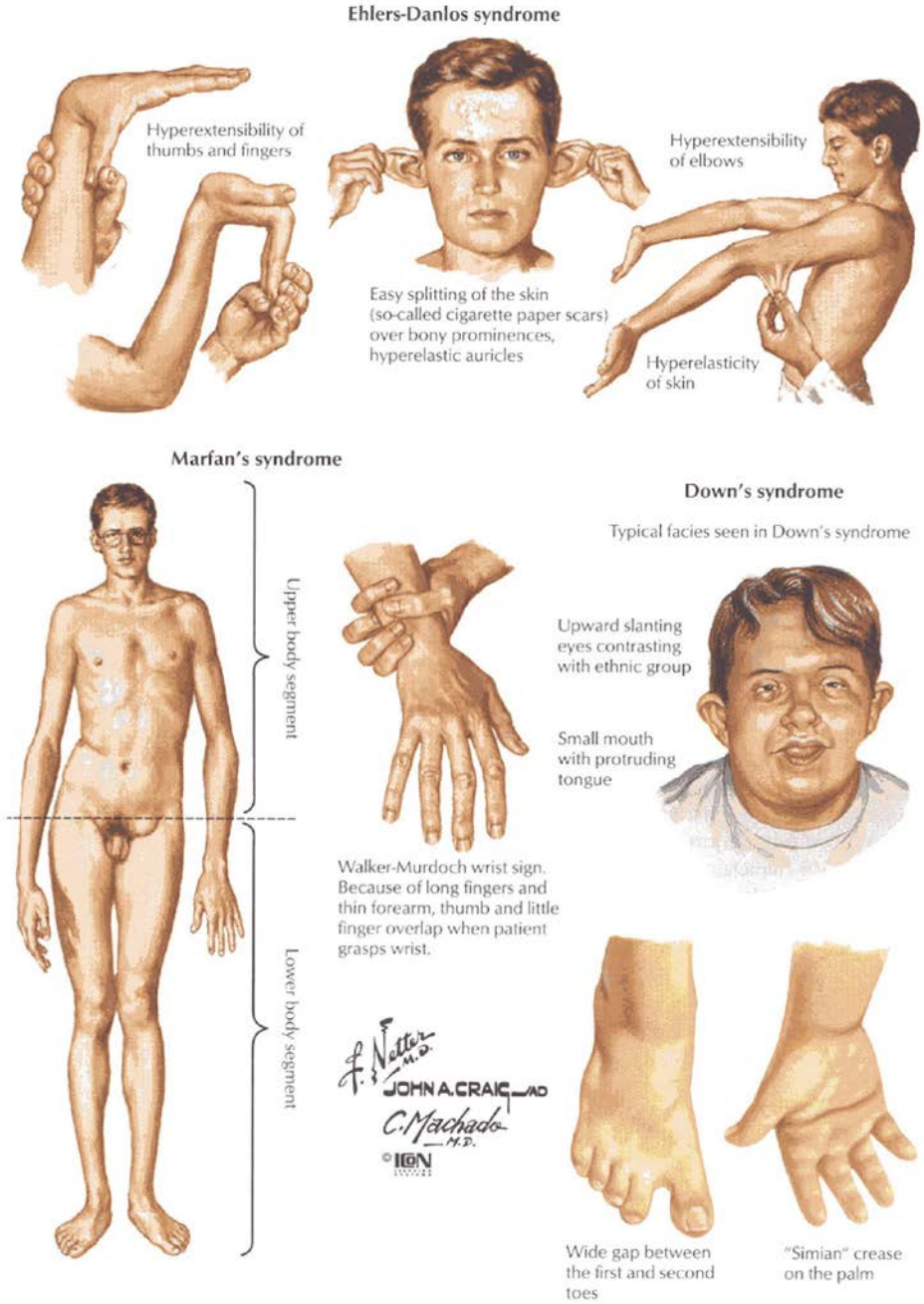
Recommendation	Class I	IIa	IIb	Level of evidence
1. Life-long beta-adrenergic blockade	●			C
2. Periodic routine imaging of the aorta	●			C
3. Prophylactic replacement of the aortic root before diameter exceeds 5·0 cm in patients with family history of dissection		●		C
4. Prophylactic replacement of the aortic root before diameter exceeds 5·5 cm		●		C
5. Moderate restriction of physical activity	●			C

Réintervention

	Recommendation	Class I	IIa	IIb	Level of evidence
1.	Surgical intervention for				
	• secondary aneurysm in dissected aorta remote from initial repair	•			C
	• recurrent dissection or aneurysm formation at previous intervention site	•			C
2.	Graft replacement for gross dehiscence or infection	•			C
3.	Use of homografts to replace infected protheses		•		C
4.	Endovascular stenting *if* surgical indication and suitable anatomy		•		C

Figure 1-3

Physical Examination: General Inspection

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