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Acute Aortic Dissection Assessment, Consultation & Referral Guide

This guide is intended as a support tool to assist the emergency department clinician with initial diagnosis, immediate clinical management, surgeon consultation and transfer to a cardiac or vascular program if required for patients with acute aortic dissection and should be applied using clinical judgement.

Acute aortic dissection should be considered in all high-risk patients presenting with abrupt onset, severe, unexplained chest, back or abdominal pain or any clinical assessment findings suggestive of ischemia (malperfusion).[1-6]

[†]**Type A aortic dissection is a CARDIAC emergency with high mortality if untreated. If suspected or diagnosed, consult with a CARDIAC surgeon immediately.** If cardiac services are not available on-site, **phone CritiCall Ontario** to facilitate consultation with a cardiac surgeon and immediate transfer to a cardiac program.

[†]**Type B aortic dissection is an emergent diagnosis that may be managed medically. Type B aortic dissection with complications is a VASCULAR emergency. If suspected or diagnosed, with or without complications, consult with a VASCULAR surgeon.** If vascular services are not available on-site, **phone CritiCall Ontario** to facilitate consultation with a vascular surgeon and transfer to a vascular program if required.

[†]Aortic dissection can be divided into two categories (Stanford classification): [1]

- **Type A**: dissections involving the ascending aorta with or without the involvement of the descending aorta
- **Type B**: dissections distal to the ascending aorta (e.g., only the descending thoracic and/or abdominal aorta)

Acute aortic syndromes include:

- Aortic dissection (AoD ~ 90%)
- Intramural hematoma (IMH ~ 5-10%)
- Penetrating aortic ulcer (PAU ~ uncommon)

They are a spectrum of disease for which the treatment is the same.[1]

References

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2. Al'Aref SJ, Girardi LN, Devereux R et al. A Contemporary Review of Acute Aortic Dissection. *Emerg Med*, 2015;5:274-283
3. Upadhye, S & Schiff, K, Acute Aortic Dissection in the Emergency Department: Diagnostic Challenges and Evidence-Based Management, *Emerg Med Clin N Am*, 2012;30:307-327.
4. Tran TP & Khoynezhad A. Current management of type B aortic dissection, *Vasc Health and Risk Man*, 2009;5:53-63.
5. Evangelista A, Maldonado G, Gruosso D et al. Insights from the International Registry of Acute Aortic Dissection, *Glob Card Sci Pract*, 2016;8:1-14.
6. JCS Joint Working Group Guidelines for Diagnosis and Treatment of Aortic Aneurysm and Aortic Dissection (JCS 2011), *Circ J*, 2013;77:789-828.
7. Riambau V, Brunkwall J, Cao P et al. Management of Descending Thoracic Aorta Diseases: Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS), *Eur J Vas Endovasc Surg*, 2017;53:4-52.
8. Alfson, DB & Ham, SW, Type B Aortic Dissections – Current Guidelines for Treatment, *Cardiol Clin*, 2017;35(3):387-410.
9. Hicks CW & Black JH, Aortic Dissection, *BMJ Best Practice*, 2018 (bestpractice.bmj.com)
10. Ontario Life or Limb Policy: http://www.health.gov.on.ca/en/pro/programs/criticalcare/docs/provincial_life_or_limb_policy.pdf

*Time goal: **≤30 minutes** from first medical contact to CritiCall activation

CLINICAL PRESENTATION

- ☐ **Abrupt onset** of **severe sharp or stabbing back, chest** and/or **abdominal pain** that may **migrate** or **ease and abate** over time.[1-5,7-9]
- ☐ **Signs/symptoms** due to complications of the dissection which may include **pulse deficits** or **end-organ ischemia**. [2-5,7-9]
- ☐ **Risk factors** (e.g., known aortic aneurysm, connective tissue disorders, uncontrolled hypertension, stimulant use).[3,4,9]
- ☐ Proceed to rapid assessment.

RAPID ASSESSMENT

- ☐ Focused **clinical assessment of high-risk features** including pain, pulse deficits, upper and/or lower-limb systolic blood pressure differential, end-organ ischemia, new murmur of aortic insufficiency, neurological deficit with pain and history of risk factors.[1,3,7]
- ☐ **ECG**, **chest x-ray** and **bloodwork** to rule out alternate diagnoses. [1,3-9]
- ☐ **If any high-risk features present and high clinical suspicion based on clinical presentation/assessment,** proceed to emergent contrast-enhanced CTA imaging of the entire aorta (chest to pelvis) with minimal delay.[1-3,6,8,9]
- ☐ If CTA imaging is not immediately available to diagnose and to determine the location (ascending or descending) of the aortic dissection, immediate consultation with a CARDIAC surgeon at a cardiac program should be facilitated by phoning CritiCall Ontario.

PHONE CRITICALL ONTARIO
1-800-668-4357

CONSULT WITH SURGEON

For all patients with suspected or diagnosed **Type A aortic dissection**, initiate immediate consultation with a **CARDIAC** surgeon and transfer to a cardiac program through CritiCall.

For all patients with suspected or diagnosed **Type B aortic dissection**, with or without complications, initiate consultation with a **VASCULAR** surgeon.

Discussion with the surgeon to include:

- ☐ Summary of clinical assessment
- ☐ Results of assessments including contrast-enhanced CTA (with expected upload to the Emergency Neuro Image Transfer System [ENITS] if completed) or imaging to be done based on the high-risk features present and availability of imaging modalities
- ☐ Care plan
- ☐ Need and preparation for transfer

RAPID TRANSFER

- ☐ Arrange immediate transfer if required. Cases confirmed Life or Limb, transportation will be arranged by CritiCall Ontario. Cases not confirmed Life or Limb, transportation to be arranged by referring hospital.[10]
- ☐ Need for physician or nurse escort to be determined by referring and/or receiving physician.
- ☐ Charge nurse to contact appropriate charge nurse at receiving hospital to support patient handover.
- ☐ Encourage transfer service to notify receiving hospital 30 minutes prior to expected arrival.

RECEIVING HOSPITAL

- ☐ Emergent evaluation and intervention by receiving cardiac or vascular team.

This information is for guidance only and is not a requirement. *Time goals are not standards for medicolegal purposes. Times will vary based on patient presentation and other circumstances. Consult, transfer, and repatriation of the patient is supported by the Ontario Life or Limb Policy.[10] Final decision to transfer remains at the discretion of the referring and receiving physicians.

IMMEDIATE CLINICAL MANAGEMENT

- ☐ Aggressive management of **blood pressure** and **heart rate** to the following targets:
  - systolic blood pressure to 100 to 120 mmHg[1,3,6-9]
  - heart rate to 60 beats/minute or less[1,3,4,]
  - ☐ **Betablockers** (e.g., Labetalol, Esmolol) should be considered as the first line of medical therapy.[1-4,6-9]
  - ☐ **Other blood pressure lowering medications** should be considered if a patient does not respond or is intolerant to betablockers.[1,2,4,7,8]
  - ☐ **Vasodilators** may also be used with caution following rate control therapy to avoid reflex tachycardia.[1-3,8]
- ☐ **Pain/nausea** management[3,4,6-9]
- ☐ Supplemental **oxygen** if required[4,9]
- ☐ Initiate appropriate **venous access and arterial lines** for resuscitation and monitoring. Do not delay transfer for these adjunctive supports.

TYPE A

- ☐ Proceed to **urgent consultation** with a **CARDIAC surgeon** and **immediate transfer to a cardiac program through CritiCall.**

TYPE B

Medical treatment is the initial management strategy for acute type B aortic dissection unless life-threatening complications develop which may include:[1,2,4-9]

- End-organ ischemia (bowel, kidney, spine, or legs)
- Hypotension and/or shock
- Aortic expansion or rupture
- Recurrent or refractory pain
- Refractory hypertension despite medical therapy

For complicated or hemodynamically unstable patients:[3,4,6,9]

- ☐ Proceed to **urgent consultation** with a **VASCULAR surgeon** and **immediate transfer to a vascular program.**

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