

C05: Acute Aortic Dissection

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Reviewed:

Introduction

The incidence of acute aortic dissections is reported as high as 4.6/100,000 and appears to be increasing. Although infrequent, approximately 80% of patients experiencing an acute aortic dissection will arrive in the emergency department by ambulance. Mortality increases by 2% for every hour of delay in diagnosis, and fully half of all patients die within three days of the onset of their symptoms.

Despite the severity of the disease, 1 out of every 6 patients will be misdiagnosed. Acute aortic dissection often masquerades as a number of other conditions, including acute coronary syndrome and stroke. Paramedic care is focused on early recognition, expedient transport, analgesia, and judicious resuscitation.

Essentials

- Paramedics must consider acute aortic dissection in any patient experiencing a sudden onset of chest, back, or abdominal pain. Patients commonly describe pain as "sharp" or "tearing," with the maximal intensity at onset, and radiating into the back, abdomen, or along the path of the aorta. Up to 17% of patients will not experience pain, and will instead present with a decreased level of consciousness, transient syncope, or focal neurological deficits.
- The tear in the aorta can interrupt blood supply to any organ. In patients with pain suggestive of an aortic dissection, who also have stroke-like symptoms, paralysis, voice hoarseness, or limb ischemia, paramedics should consider the possibility that these symptoms are a result of the dissection.
- Differences in blood pressure between arms are not a consistent indicator of an aortic dissection, and must not be used to exclude the diagnosis.

Additional Treatment Information

- Tachycardia can significantly worsen the clinical trajectory of acute aortic dissection. Control of the heart rate is not indicated for paramedics. Every effort must be made to avoid patient exertion during movement.
- Patients with acute aortic dissections may initially present with hypertension. In patients who are hypotensive, fluid resuscitation must be undertaken carefully so as to not exacerbate the dissection. A mean arterial pressure (MAP) of 65 mmHg is sufficient.
- Analgesia should be provided to patients, but titrated carefully given the patient's hemodynamic status.

General Information

- An acute aortic dissection occurs when the intima of the aorta tears and blood enters the medial layer of the aortic wall, creating a false lumen.
- Risk factors for aortic dissections include a family history of dissections, hypertension, and/or cardiovascular surgery. Dissections are more common in older males, and individuals with Marfan or Ehler-Danlos Syndrome are particularly at risk.
- A new aortic regurgitation murmur, and/or a pulse deficit in the setting of pain suggestive of an aortic dissection, is strongly suggestive of the diagnosis.
- Patients with a widening pulse-pressure are in a critical stage of their disease, and paramedics should make preparations for an impending cardiac arrest.
- Acute aortic dissections are described using the Stanford Classification:
 - Type A dissections involve the ascending aorta, with or without the involvement of the arch or descending aorta.
 - Type B dissections involve the descending thoracic, and/or abdominal aorta.
- Do not confuse acute aortic dissection with abdominal aortic aneurysms.

Interventions

First Responder

- **WARNING: DO NOT EXERT THE PATIENT DURING MOVEMENT**
- Supplemental oxygen as required
 - → [A07: Oxygen and Medication Administration](#)
- Position patient supine to optimize blood pressure

Emergency Medical Responder – All FR interventions, plus:

- Provide supplemental oxygen to maintain SpO₂ ≥ 94%.
 - → [A07: Oxygen and Medication Administration](#)
- Transport to appropriate facility with early notification
- Consider analgesia:
 - → [E08: Pain Management](#)
- [Nitrous oxide](#)

Primary Care Paramedic – All FR and EMR interventions, plus:

- Establish vascular access:
 - Consider fluid bolus if hypotensive, and without signs of pulmonary edema. Caution: target blood pressure to MAP of 65 mmHg. Do not over-resuscitate.
 - → [D03: Vascular Access](#)
- Consider analgesia:
 - → [E08: Pain Management](#)

Critical Care Paramedic – All FR, EMR, PCP, and ACP interventions, plus:

- Consider blood pressure lowering agents in cases of confirmed or highly suspected dissection where the patient is hypertensive
 - [LABETalol](#), propranolol, or esmolol (reduce heart rate to < 60 beats per minute)
 - Nitroprusside can be added if target systolic blood pressure of 100-110 mmHg cannot be reached with beta-blockers alone

References

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