Aortic Dissection. Case Report

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Abstract
Emergent urgencies in hypertension can be observed in severe hypertension disorders and are associated with acute end-tissue damage. Although frequency of Emergency medical service (EMS) dispatching to such cases is lower than in the past, it still represents not inconsiderable amount of cases.

The authors present a clinical report from own EMS cases, where an dispatch of EMS ambulance to “easy” vertebral pain diagnosis in a 55-year old male was actually a life-threatening condition. Sudden onset of abrupt thoracic back pain without response to analgetics, extreme values of blood pressure with discrepancy between right and left limbs (30 - 40 mmHg), and negative ECG finding in terms of missing acute coronary syndrome signs led us to the diagnosis of possible aortic dissection, which was proved by CT scan.

Keywords: Back Pain; Hypertension Emergency; Acute Aortic Dissection

Introduction and Case Report
Case report: Thoracic back pain
Emergency medical service activation (112 call)-back pain and hypertension

Emergency medical service ambulance was activated in November at 4:56 p.m. to a 55-year old male with back pain and hypertension. Ambulance estimated time of arrival to patient - 5 minutes.

Scene situation
Upon arrival, patients is sitting and leaning forward and complains for strong pain between scapulas. The pain appeared suddenly, while getting out of the car, and lasted with unchanged intensity for one hour. Pain was described by patient as "he was being stabbed with knife". He did not experienced such a pain before. He denied any trauma or abrupt movements.

From history and physical examination at scene
History: Treated for hypertension for 8 years, he admits higher values of blood pressure (150-230/90-120). Other medical conditions denied.

Medications: Tarka (trandolapril+verapamil) 180 mg/2 mg l-0-0, Anopyrin 100 mg 1-0-0.

Aortic Dissection. Case Report

Abuses: Former smoker for several years, wine sometimes – occasionally.

Allergies negative.

Family history: A 80-year old mother still alive, father died as 65 year old because of stroke.

Physical examination: Awake, fully orientated, responsive, GCS 15, warm and wet skin, facial hyperemy, exophthalmus, isocoric pupils with adequate photoreaction.

Blood pressure 290/160 mmHg!! On left arm, 250/130 mmHg on right arm, heart rate 76 bpm/minute, well palpable on both hands (radial artery), without asymmetry on carotides, pulse well palpable on both popliteal, tibial and dorsalis pedis arteries. Clean breathing, vesicular, no phenomenon on lung auscultation, heart beats regular, augmented heart sounds, sytolic murmur without propagation in 4th intercostal space paresternally right, non-hearable diastolic murmurs. Abdomen in niveau, without tenderness, however, because of obesity and anxiety thorough examination is not possible.

Figure 1: Blood pressure 290/160 mmHg on left arm, 250/130 mmHg on right arm.

12-lead ECG

ECG: sinus rhythm, regular action, HR 69/min, normal PQ and QRS conduction times, left anterior fascicle blockade, non-specific changes in repolarization. Second ECG in 20 minutes was without significant change.

Treatment at scene and transport

Isoket (isosorbidinitrate) spray 3x sublingualy (s.l.), Tensiomin (captopril) 25 mg s.l., Ebrantil (urapidil) 25 mg intravenously (i.v.), MgSO₄ 10% 1g (10 ml) i.v., Guajacur 5% (guaifenesin) 0.5g i.v., Tramal (tramadol) 100 mg i.v., Morphin 8 mg i.v., Torecan (tietyperazin) 6.5 mg p i.v.

Course after treatmen and during the transport: Vitals: BP 290/160...230/120...160/90...150/80, HR 76...68...68.

Only mild relieve of pain after the treatment, patient adds chest pain to his pain between scapulas and thoracic back pain. Patient transported to level I trauma center, Emergency department Ruzinov as:

- Hypertension crisis
- Suspicious acute aortic dissection.

Aortic Dissection. Case Report

Estimated time of arrival to Emergency department - 15 minutes.

Imaging from ED ICU

Chest X-ray - widened mediastinum.

Chest X-ray in supine position shows widened mediastinum.

Figure 2: Chest X-ray in supine position.

CT aortography

Aortic Dissection. Case Report

CT aortography (until aa. renales detachement): Description: Just underneath detachment of left subclavian artery is dilated aorta to approximately 45 mm. Distally, the lumen is narrowing into 38 mm and at level of renal artery branching it reaches 33 mm in diameter. The lumen of aorta is doubled between detachment of subclavian artery to detachment of renal arteries. Pulmonary parenchyma is clear, without focuses. Pleural cavity and pericardial sac is without free liquid. Impression: Aortic dissection, Stanford B type.

Treatment at ICU of 5th internal clinics

After confirmation of the aortic dissection diagnosis, the conservative approach was chosen at surgery ICU-parenteral and peroral antihypertensive treatment (urapidil 10 mg/hrs i.v.) was continued more intensively, together with continual analgesis (tramadol 24 mg/hrs i.v.).

Transport to Heart and vessel surgery clinics (the second day after admission)

The next day morning, patient was transported to the Cardiosurgery department of National Institute of Cardiovascular Diseases in Bratislava. Because of the high risk of collapse of the thoracic aorta lumen with subsequent fatal organ ischemia, the radical surgery - implantation of stentgraft was performed.

Implantation without complications, complete redistribution into the aortic lumen was achieved. Within one week, the patient was released for out-patient care.

Discussion

Aortic dissection is a longitudinal rupture of the aortic wall that spreads downwards the aortal lumen. Apart from the risk of aortic rupture and subsequent death, it means a significant risk for occlusion of detaching smaller arteries and ischemia to inflicted regions. The presence of aortic dissection can be predicted outside the hospital just on the clinical symptoms and physical finding.

For dissection of thoracic aorta, strong, shocking pain is typical, especially in the central part of the thorax or between the scapulas. Patient can refer to it as sharp, knife-like pain, with the sudden onset and maximal intensity immediately or shortly after the onset. The

pain than remains constant for several hours and is the mark of dissection progress. Acute aortic dissection of mainly thoracic aorta may imitate cardiac chest pain, however, usually more intensely. In our patient, the standard opioid therapy (tramadol 100mg i.v. and morfium 8 mg i.v.) was almost without effect.

**Figure 4**: Aortal dissection classification.
ECG changes are usually without specific findings in aortic dissection. Usually it is negative for changes characteristic for acute coronary syndrome.

The major examination should be examination of pulse on both upper and lower limbs. Important sign is missing of pulsation of one or more of the large arteries, or attenuated pulse. In our case, the pulse was present symmetrically on all large vessels, including the carotides.

Blood pressure values are very important, at the beginning they use to be extremely high. In our patient, the discrepancy in blood pressure values on right and left upper limb was present. This asymmetry of blood pressure (290/160 mmHg left, 250/130 mmHg right hand) as well as the pain between the scapulas without relief after opioid analgesis helped us in differential diagnosis.

Patient, in whom acute aortic dissection is suspected, belongs to the closest competent hospital, where echocardiography (either transthoracic or transeosophageal), aortography, CT or nuclear magnetic resonance are available. Antihypertensive treatment and aggres-
Aortic Dissection. Case Report

Effective blood pressure control is recommended by drugs administered parenterally. At EMS, we have isosorbidinitrate and urapidil at our disposal.

After the diagnosis is confirmed in hospital, the treatment is different and depends on localization of the dissection. Nowadays, the relatively new but rapidly developing intervention-radiological treatment by stentgrafting is available for the treatment of thoracic aorta dissection. These interventions - endovascular method EVAR (Endovascular Aortic Repair) and TEVAR (Thoracic Endovascular Aortic repair) do not destroy the whole integrity of the body, and is considered to be mini-invasive when compared to standard surgery treatment [1-14].

Conclusion

In case of emergent hypertensive crisis outside hospital, we have to always think about the possibility of acute aortic dissection, especially in patients with known hypertension and epigastric or chest pain. Each shocking chest and back pain must be thoroughly evaluated. To EMS teams it is recommended to palpate pulse on all limbs and to compare blood pressures on left and right side. Pulse vanishing, blood pressure discrepancy more than 20 mmHg makes the diagnosis of acute aortic dissection more probable. Such a patient should be primary transported to the department of cardiovascular surgery.

Aortic dissection (Stanford B type)

Definition

Aortic dissection is a longitudinal rupture of the aortic wall that spreads downwards the aortal lumen. Apart from the risk of aortic rupture and subsequent death, it means a significant risk for occlusion of detaching smaller arteries and ischemia to inflicted regions.

Symptoms and signs of thoracic aorta dissection

- Thoracic back pain (nontraumatic, suddenly, shocking pain, for dissection of thoracic aorta is typical back pain between scapulas).
- Blood pressure (left and right arm - asymmetry more than 20 mmHg).
- Assymetry pulse on carotides, on hands (radial artery).

Diagnosis

- ECG - negative for changes characteristic for acute coronary syndrome.
- Chest X-ray - widened mediastinum.
- Echocardiography (either transthoracal or transeosophageal).
- CT aortography.

Treatment

- TEVAR - Thoracic Endovascular Aortic Repair.

Treatment of emergency medical service ambulance (EMS)

- Antihypertensive treatment and aggressive blood pressure control (parenteral and peroral antihypertensive treatment),
- Opioid analgesis,
- Transported to the Cardiosurgery department (implantation of stentgraft).

Figure 6: Picture of EMS crew with the patient.


12. www.escardio.org/guidelines

13. www.cardiology.sk

14. www.angio.sk

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