

Sudden Death Among Czech Professional Civilian Pilots during the last 25 Years and a Fatal Case Report of the Erdheim Disease

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Introduction

- Definition of the sudden death (SD)
 - Cardiovascular death (90 – 93%)
 - Men 3 -4 times higher incidence than women, increases with age
- The most often causes of the cardiovascular sudden death
 - Ischaemic cardiac disease
 - Cardiomyopathy
 - Rhythm disturbances
 - Disturbances of the ion transfer
 - Unexplained cases

Smoking – one of the significant risk factor

- Increases the risk about 50% due to:
- Higher spasms of arteriolas
- Higher blood pressure
- Higher aggregation of blood platelets
- Rise in catecholamines concentration

Sudden death in young persons

- The accurate statistical data are not available
 - Sudden death at young persons is rare
 - The autopsy does not find the cause in 1/3 cases
- About 5 cases to 100 000 young persons
 - Usually not ischaemic
 - Cardiomyopathy
 - Anomaly of coronary arteries
 - Myocarditis

Sudden death in our group of pilots

- Period 1992 – 2017
 - Myocardial infarction (7x)
 - Cancer (5x)
 - Acute leucaemia (2x)
 - Acute pancreatitis, liver failure, decompensation of asthma bronchiale, Erdheim disease (1x)
 - Not seen during the duty except the last case (Erdheim disease)

Erdheim disease

- A sudden incapacitation of a captain during the approach in 2012
 - 54 years
 - Obesity
 - Higher blood level of lipids and uratic acid
 - Later
 - Presbyopia
 - Perception hearing impairment

Erdheim disease - continued

- The aircraft speed increased
- An asymmetric engine traction occurred
 - No response of the captain
 - Cabin crew administered 100 % O₂
 - First aid
 - Not successful

Erdheim disease - continued

- Aortic dissection
- Cardiac tamponade
 - A rupture in the upper part of the right atrium
 - Cystic medial necrosis:
 - Focal destruction of elastic fibres, muscle cells and collagen
 - Mukoid deposits
 - In the ascending aorta
 - The heard atrium wall
 - No alcohol or drugs

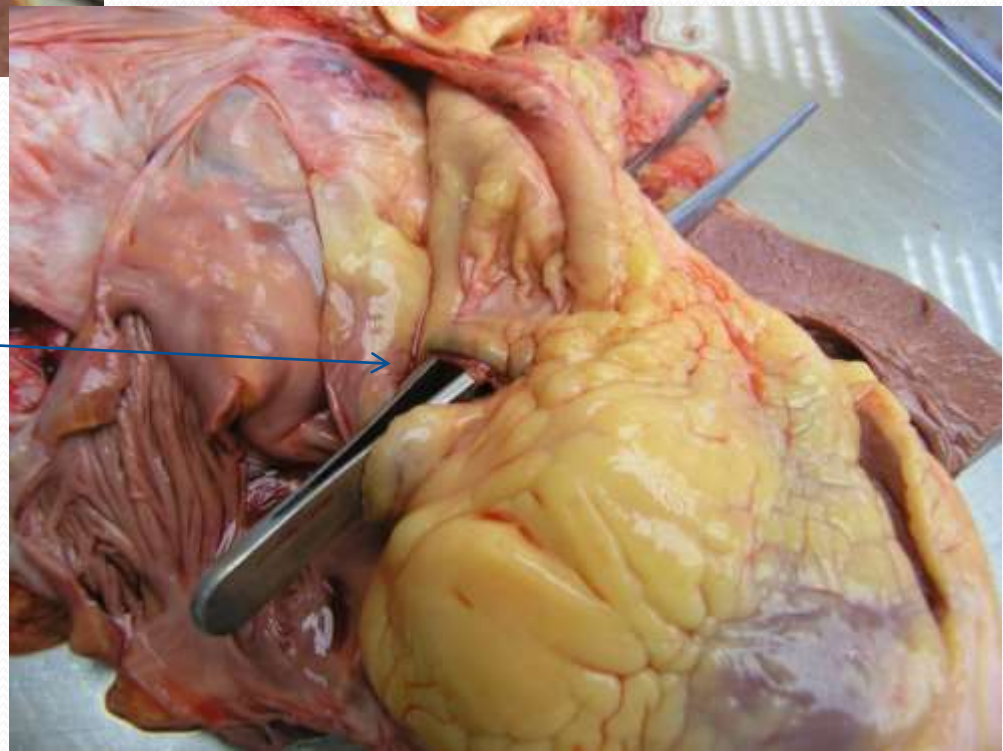


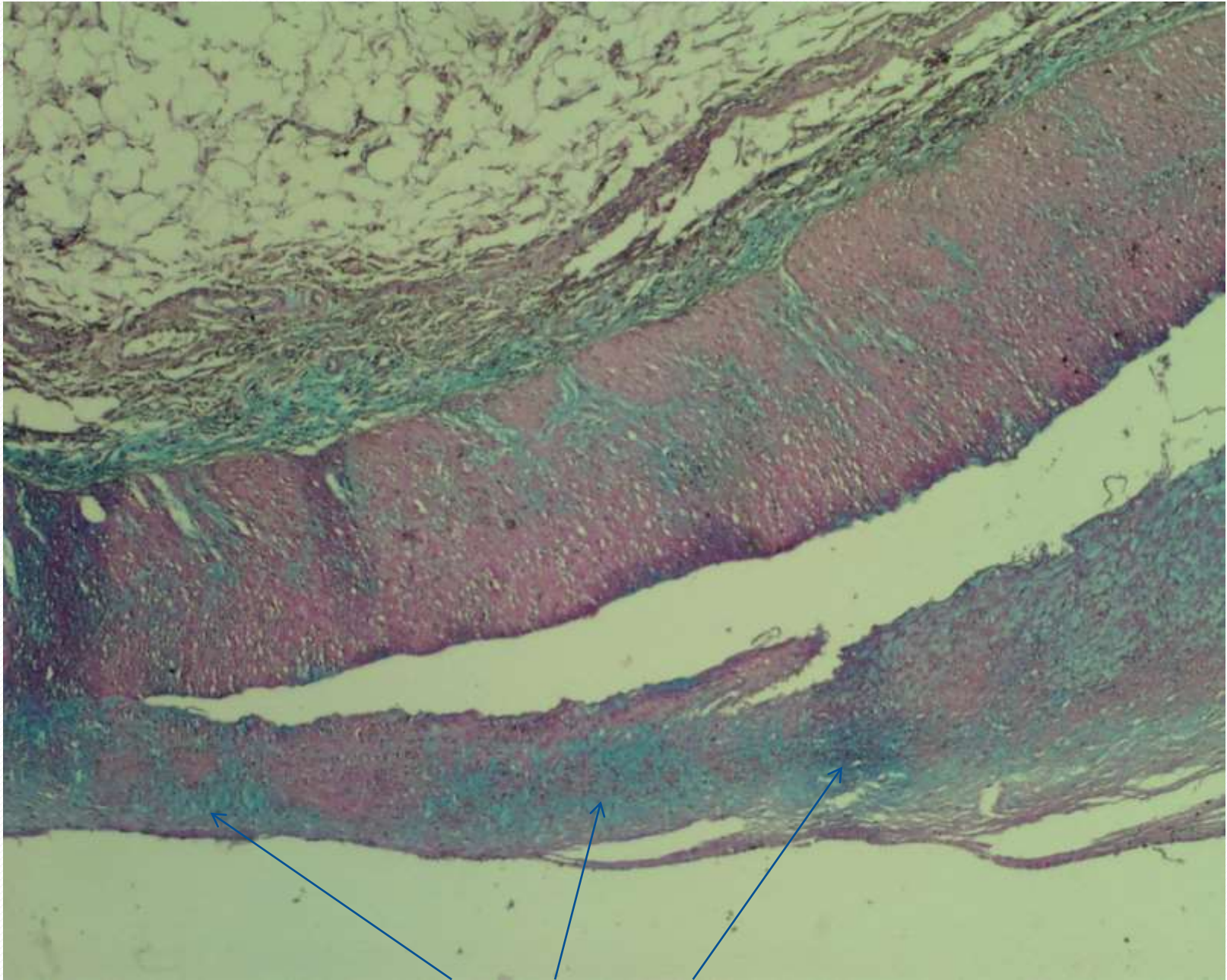
Cardiac
tamponade





Fissures





Cystic Medial Necrosis

The major cause of in flight incapacitation in civil and military pilots

- Acute coronary events
- New onset of idiopathic epilepsy
- Physiological problems (desorientation, hypoxia, G-effects, etc.)
- The most common cases of incapacitation – gastrointestinal problems but not FATAL

Erdheim disease is very rare

- Instead collagen, elastin and smooth muscle cells
 - Formation of cysts
 - Accumulation of mucopolysaccharides
- Breakdown of all elements
 - Vulnerability of the aortic wall
 - Rupture of the wall
- Tamponade, death

Aeromedical disposition

- Unfit as a professional pilot
- Successfully treated a minor dissection
 - unfit as a professional pilot
 - under strict follow up
 - Cardiological review
 - Echocardiography study
 - If satisfactory maybe fit for the private flying with the limitation SAFETY PILOT



Thank you for your attention