Clinical case presentation

Patient with acute coma

Uwe Raaz

Germany

Case vignette

- 76 years old male patient living in a nursing home was admitted to our emergency room due to an acute loss of consciousness (Glasgow Coma Scale 3)
- orotracheal intubation / mechanical ventilation was initiated by emergency medical service prior to admission due to comatose state

History

- arterial hypertension, trigeminal neuralgia, dementia, schizo-affective psychosis
- no history of stroke, epilepsy
- medi[illegible]

Initial e

- anis[illegible]aneous breath[illegible]
- RR 150/90 mmHg, sinus rhythm, 84bpm (no catecholamines administered)
- cardiac and pulmonary auscultation, abdominal examination: no specific findings
- extremities: warm, no edema
- Chest X-Ray: no significant pathologic findings
- ECG: sinus rhythm, right bundle branch block

Diagnosis (I)

- Acute coma of unknown etiology

Acute coma: etiology

Primary cerebral disorders	Structural brain lesions	*Traumatic brain injury*
		Ischemic stroke
		Hemorrhage
		Tumor
		Abscess
	Seizures	
	Central nervous system infection	
Systemic derangements	Toxic	*Medication overdose*
		Drugs
	Metabolic	*SIRS / sepsis*
		Hypoxia; hypercapnia
		Hypoglycemia, Hyperglycemic crisis
		Hypothermia, Hyperthermia
		Electrolyte disorders (sodium, calcium)
		Hepatic failure
		Renal failure
	Endocrine	*Panhypopituitarism*
		Adrenal insuffiency
		Thyroid dysfunction

Stevens RD et al., Crit Care Med 2006; Young GB., Ann N Y Acad Sci 2009

Acute coma: diagnostic workup

Primary cerebral disorders	Structural brain lesions	*Traumatic brain injury*
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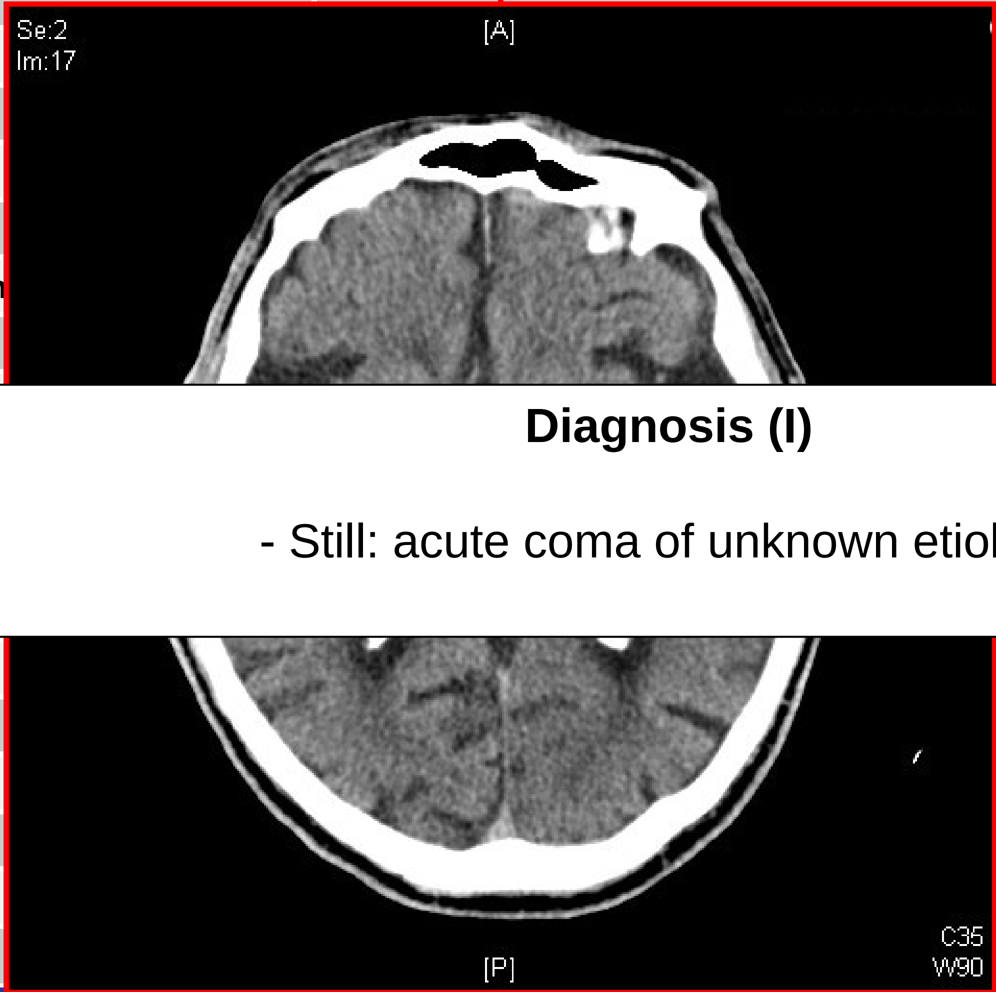


Diagnosis (I)

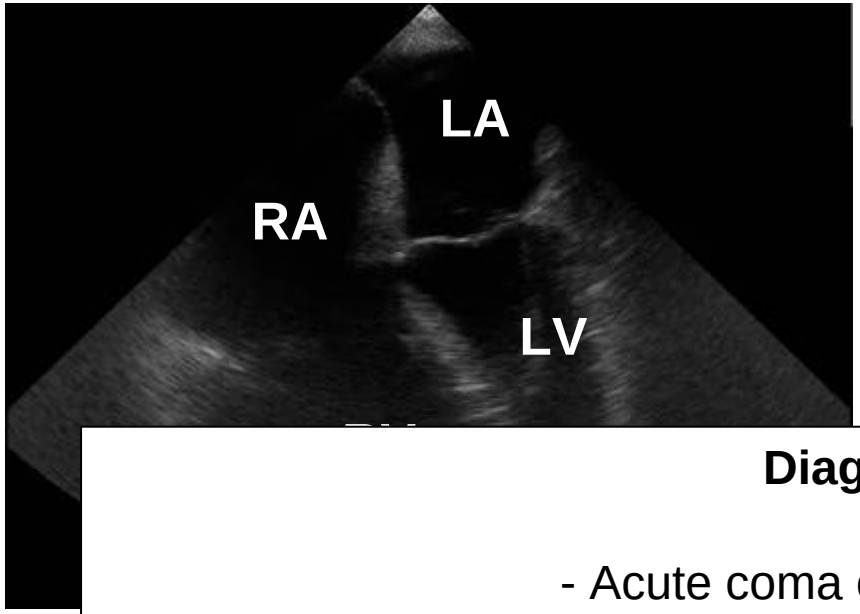
- Still: acute coma of unknown etiology

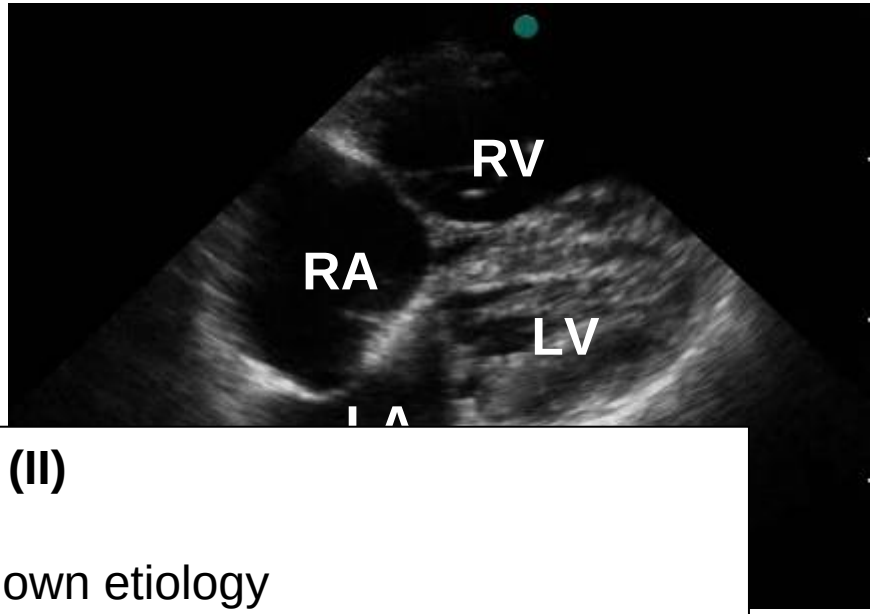
se level;
with normal findings
BUN/creatinine slightly elevated; normal ammonia level

ESIM 2009

Echocardiography (TTE / TEE)

Rationale: BNP: 3788 pg/ml (< 100 pg/ml); Troponin I: 2.12 ng/ml (<0.5 ng/ml)





Diagnoses (II)

- Acute coma of unknown etiology

- Pulmonary hypertension with marked right ventricular overload and secondary right-to-left-shunting via PFO

RA: right atrium; RV: right ventricle
LA: left atrium; LV: left ventricle

CT pulmonary angiography

Rationale: Pulmonary hypertension; D-dimer +; suspected DVT (compression sono)

Diagnoses (III)

- Acute coma of unknown etiology

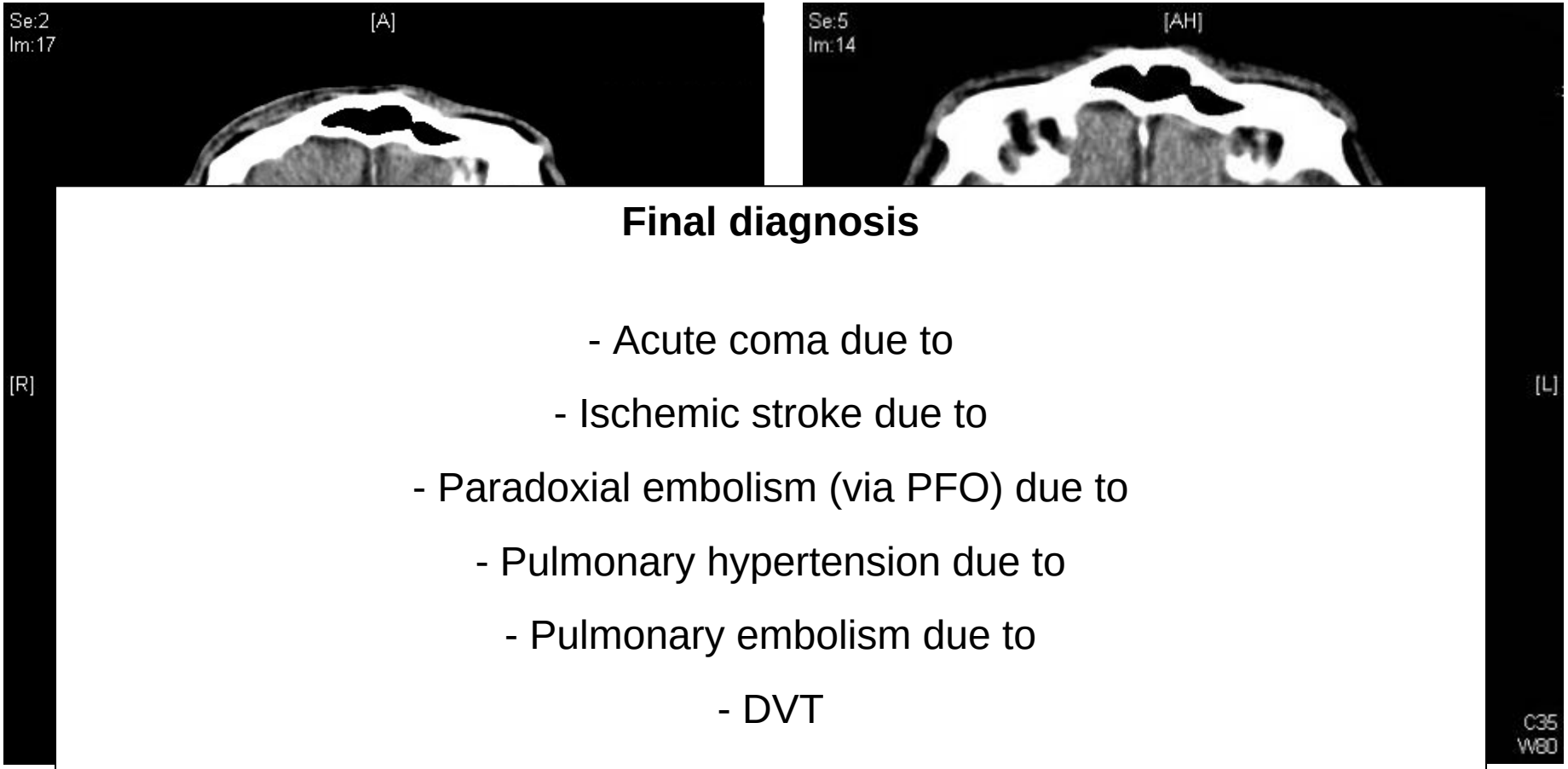
- Pulmonary hypertension with marked right ventricular overload and secondary right-to-left-shunting via PFO

- Pulmonary embolism

DVT: deep venous thrombosis

Brain CT scan (repeated)

Rationale: Persistent coma; pulmonary embolism with secondary right ventricular overload, PFO with right-to-left shunting → **Paradoxical embolism?**



Final diagnosis

- Acute coma due to
- Ischemic stroke due to
- Paradoxial embolism (via PFO) due to
- Pulmonary hypertension due to
- Pulmonary embolism due to
- DVT

day 0 **day 2**

PFO: Patent foramen ovale

Conclusion

1. **Etiology of acute coma is complex involving primary cerebral disorders as well as systemic derangements.**

2. **Pulmonary embolism may increase pulmonary pressure which in turn may open a functionally closed PFO allowing secondary paradoxical embolism.**

! **In cases of unclear neurologic symptoms – right up to coma – and coincident pulmonary embolism, ischemic stroke due to paradoxical embolism should be considered in the presence of PFO (and other cardiac shunts) – even if initial neuroimaging is negative.** !


Thank you