

Case report:
**Acute chest pain and cardiogenic shock in a 33 years old
patient after aortic valve reconstruction**

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Initial clinical presentation

- A 33 years old male patient presented at the emergence department with sudden onset of severe chest pain and progressive dyspnea
- Chest pain was persistent despite administration of 15 mg morphine prehospitally by the emergency physician

Previous diagnosis:

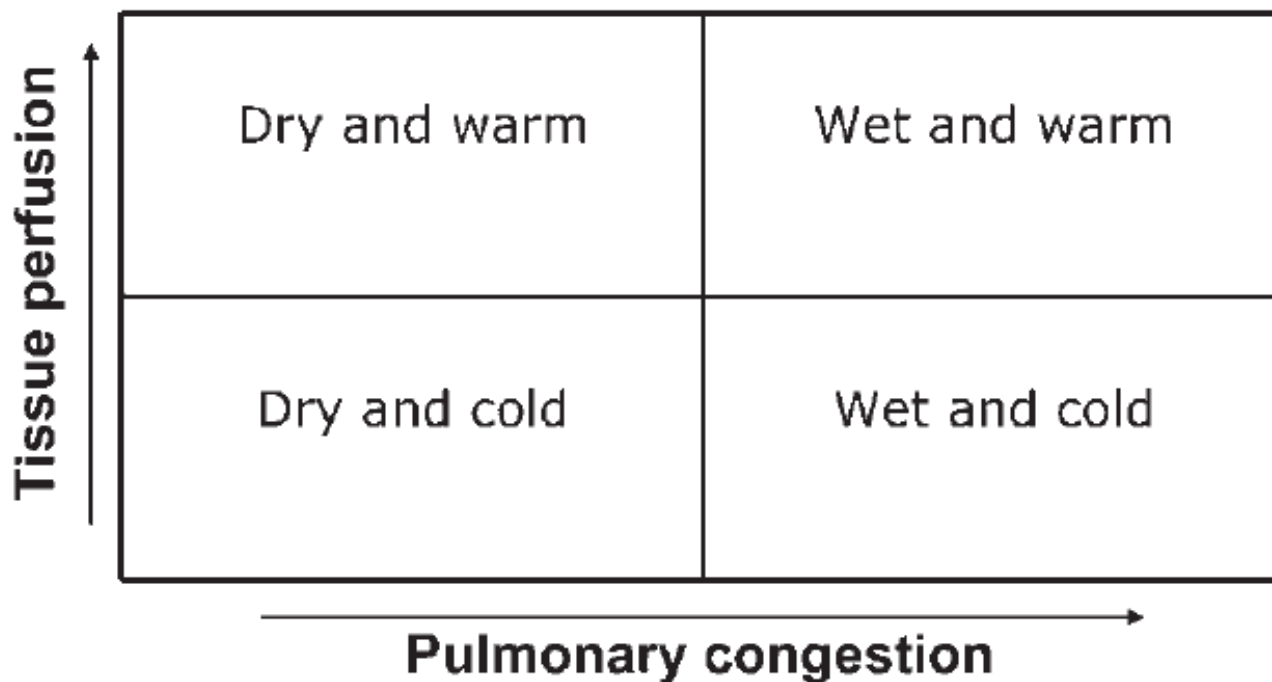
- Aortic valve reconstruction 6 years ago due to bicuspid aortic valve
- Acute kidney injury due to analgetic (NSAID) abuse

Physical examination:

- Blood pressure 120/59 mmHg
- Regular heart rate, \approx 100 bpm
- Heart: holo-systolic and a decrescendo diastolic murmur
- Lung: no crackles on auscultation
- Skin wet and cold

Clinical assessment of acute decompensated heart failure

Clinical Classifications



Diagnostic examinations

- **ECG:** Sinus tachycardia, no bundle branch block or significant ST segment changes → non-diagnostic ECG
- **Blood gas analysis:** (with 2 L/min O₂ nasal)
 - pH 7,302
 - pO₂ 74 mmHg
 - pCO₂ 48 mmHg
 - BE -2.2 mmol/l
 - HCO₃⁻ 21.6 mmol/l
 - Lactate 1.6 mmol/l

Blood analysis

Kumulativbefund Druckdatum : 01.07.2014 - 13:33 (Notfall)

Ersetzt Ausdruck vom : 01.07.2014 - 12:52

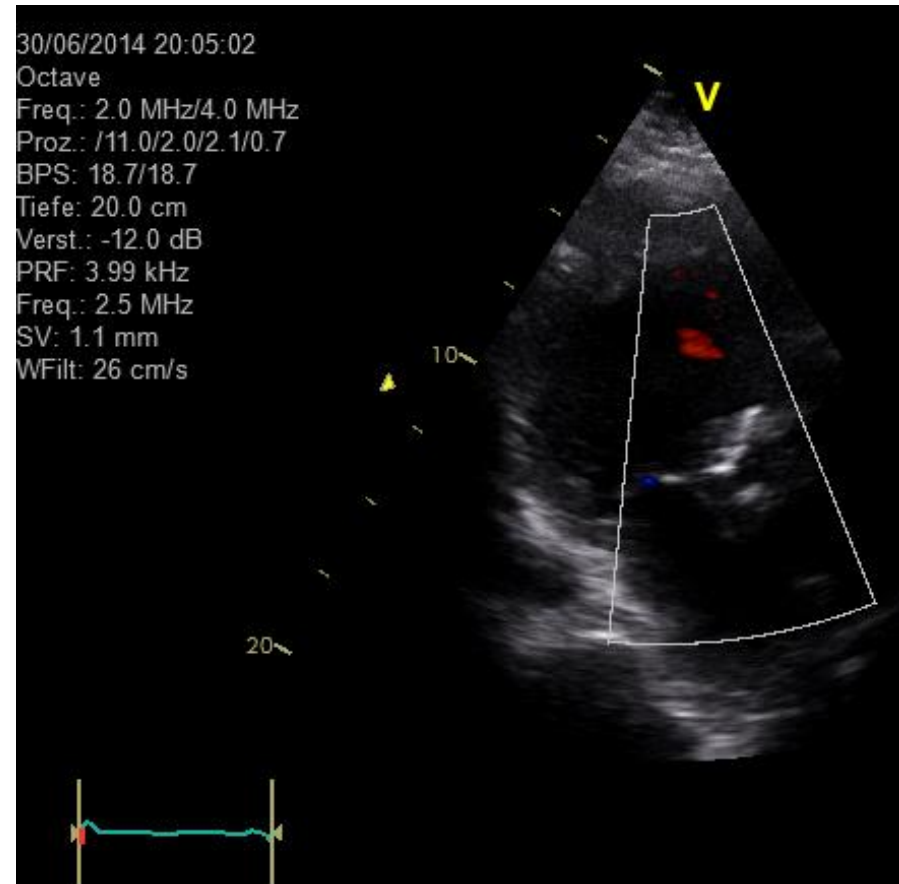
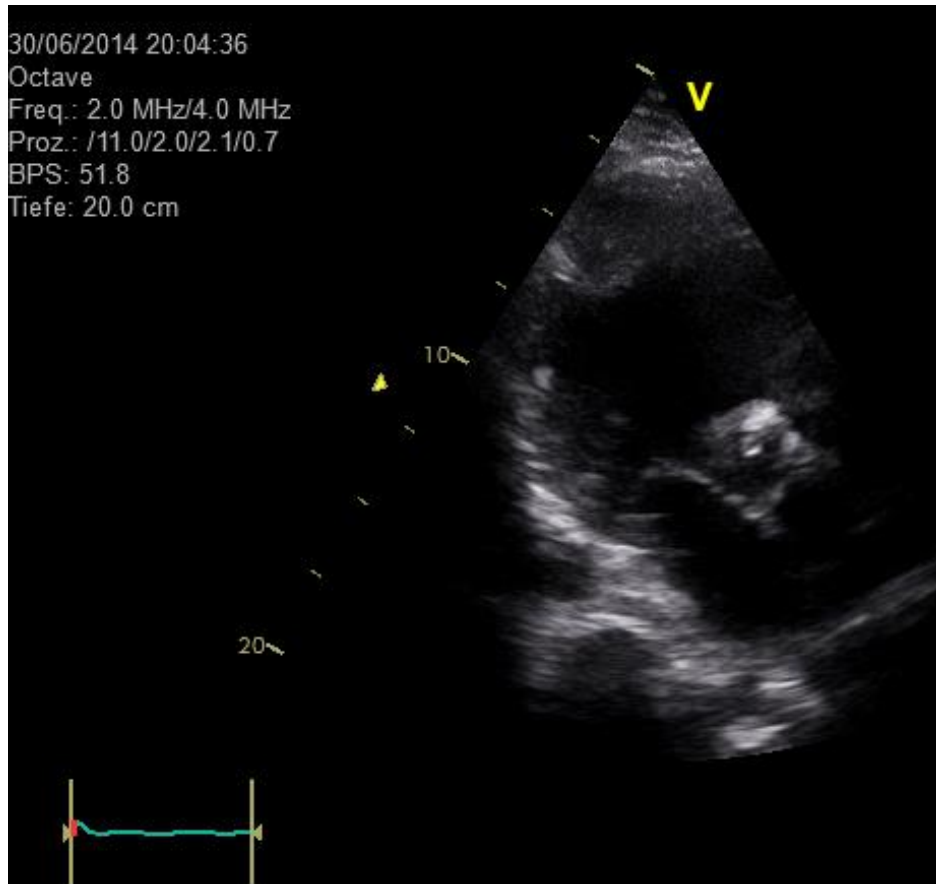
Analyse	Ref.-ber.	Einheit	010714 11:57	010714 08:59	010714 05:02	010714 02:39	300614 19:31	151211 09:30	091211 09:48
----- Prä-Analytik -----									
Entnahmezzeit			11:40	08:00	05:00		19:20	08:05	09:00
Probeneingang			11:57	08:59	05:02		19:31	09:30	09:48
Li-Heparin-Plasma					(1)			(1)	
(1) hämolytisch									
----- Klinische Chemie - Basis (Plasma / Serum / EDTA-Blut) -----									
Natrium	135-145 mmol/l	* 150	* 159(2)	* 148		* 147	141	144	
Kalium	3.5-5.1 mmol/l	* 5.5	3.9	3.7		4.4	4.0	5.0	
Chlorid	98-107 mmol/l			106		* 107			
Kalzium	2.2-2.6 mmol/l	* 2.0		* 2.0		2.2	2.3	2.4	
Kalzium, korrigiert	2.2-2.6 mmol/l	* 2.6		2.4					
Phosphat	2.5-4.5 mg/dl						4.3	4.1	
Kreatinin	0.70-1.20 mg/dl	* 3.08	* 2.78	* 2.18		* 1.35	* 1.29	* 2.34	
Kreatinin-GFR (MDRD)	80.0-140 ml/min						* 65.1	* 32.7	
Krea-GFR (CKD-EPI)	>60.0 ml/min	* 25.2	* 28.5	* 38.3		68.4			
Harnstoff	17-48 mg/dl	* 72	* 66	* 59		* 51	* 81	* 125	
Harnsäure	3.4-7.0 mg/dl						6.6	6.1	
Glukose	60-100 mg/dl			* 291		* 165	91	* 104	
Eiweiß	66-87 g/l	* 32	* 37	* 38		* 63	* 65	71	
Albumin	35-52 g/l	* 14		* 23					
CK	0-190 U/l	* 10013	* 12671	* 9148		157	54	63	
CK-MB	0-24 U/l	* 823	* 1204	* 1362		19			
CK-MB/CK-Quotient	<6 %	* 8	* 10	* 15					
Troponin T (hs)	<14 pg/ml					* 188			
ASAT (GOT)	10-50 U/l	* 1547		* 1218		29	24	20	
ALAT (GPT)	10-50 U/l	* 956		* 136			46	* 72	
gamma-GT	<60 U/l			21		31	56	39	
Alk. Phosphatase	40-129 U/l	* 21				67	61	55	
Bilirubin (ges.)	<1.2 mg/dl	0.8		* 1.2		0.8			
CHE	5.32-12.9 kU/l			* 4.96		8.42			
alpha-Amylase	28-100 U/l					37			
Lipase	13-60 U/l	* 68				19			
LDH	0-262 U/l	* 2895		* 2178		* 425	* 335	* 307	
CRP	0.0-5.0 mg/l	* 21.7	* 18.7	* 5.2		1.0	<0.3	4.4	

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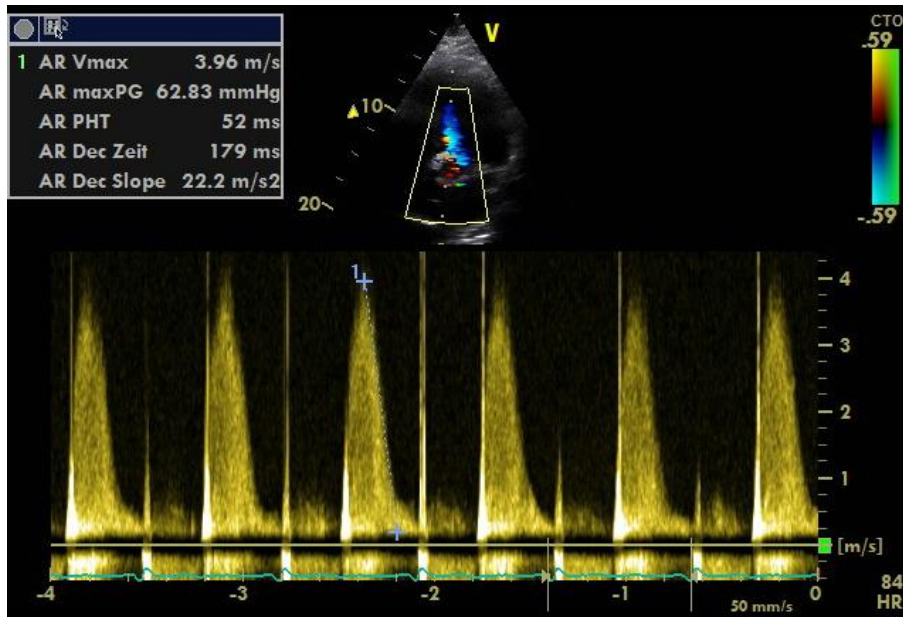
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----- Hämatologie - Kleines Blutbild (In Kooperation mit der Inneren Medizin I) -----									
Leukozyten	4.0-10.0 10 ⁹ /l	* 21.9	* 36.0	* 42.2	* 27.2	* 22.6	* 27.8	* 25.9	
Erythrozyten	4.50-5.90 10 ¹² /l	* 3.65	* 4.25	4.68	* 2.86	5.43	5.10	5.32	
Hb	14.0-18.0 g/dl	* 10.8	* 12.7	14.0	* 8.5	16.1	14.9	15.5	
Hkt	41-53 %	* 31	* 37	* 40	* 24	46	45	47	
MCV	80-99 fl	86	86	86	84	85	88	88	
MCH	27-33 pg	30	30	30	30	30	29	29	
MCHC	31-37 g/dl	34	35	35	36	35	33	33	
RDW	11.5-14.5 %	14.2	14.3	14.3	14.0	13.9	13.5	13.6	
Thrombozyten	140-400 10 ⁹ /l	* 80	* 131	149	184	237	248	343	
MPV	7.8-11.0 fl	* 11.9	* 11.7	* 11.4	10.6	* 12.0	* 11.9	10.6	
Normoblasten	/100 Leu							0	
Kommentar					(3)				
(3) Wert analytisch kontrolliert und vorzeitig gedruckt.									
----- Gerinnung (Citrat 1 + 9) -----									
Quick	70-130 %	* 37	* 48	* 52	* 32	85			
INR	0.85-1.15	* 1.84	* 1.44	* 1.35	* 2.08	1.13			
PTT	21-34 s	* 76	* 39	* 38	* 52	>140			
Thrombinzeit	15-22 s		18	21	17	>120			
Fibrinogen	180-400 mg/dl	* 108			* 100	214			
AT-III	79-112 %				* 40				

Emergency echocardiography

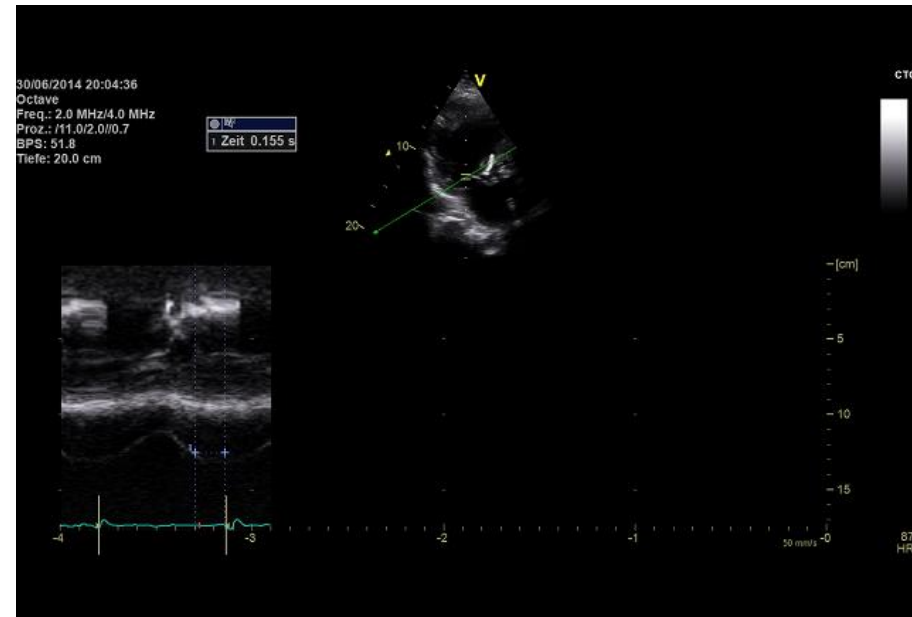


Transthoracic apical long axis view

Emergency echocardiography

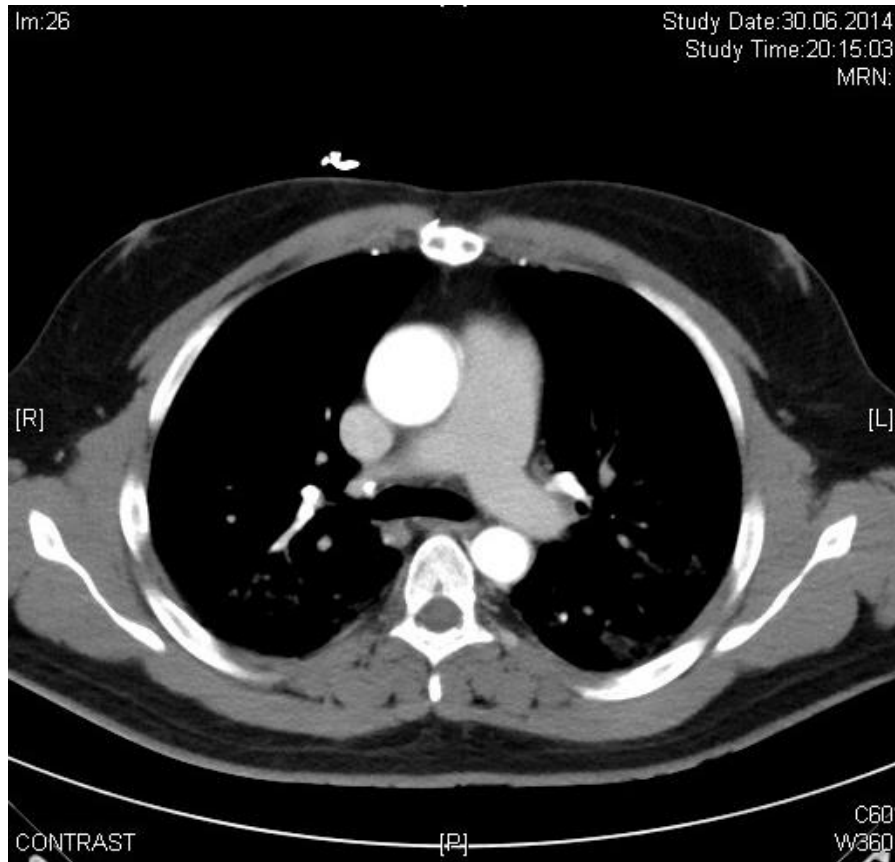


CW doppler signal confirms severe aortic regurgitation with equalized end-diastolic pressure in the left ventricle and the aorta

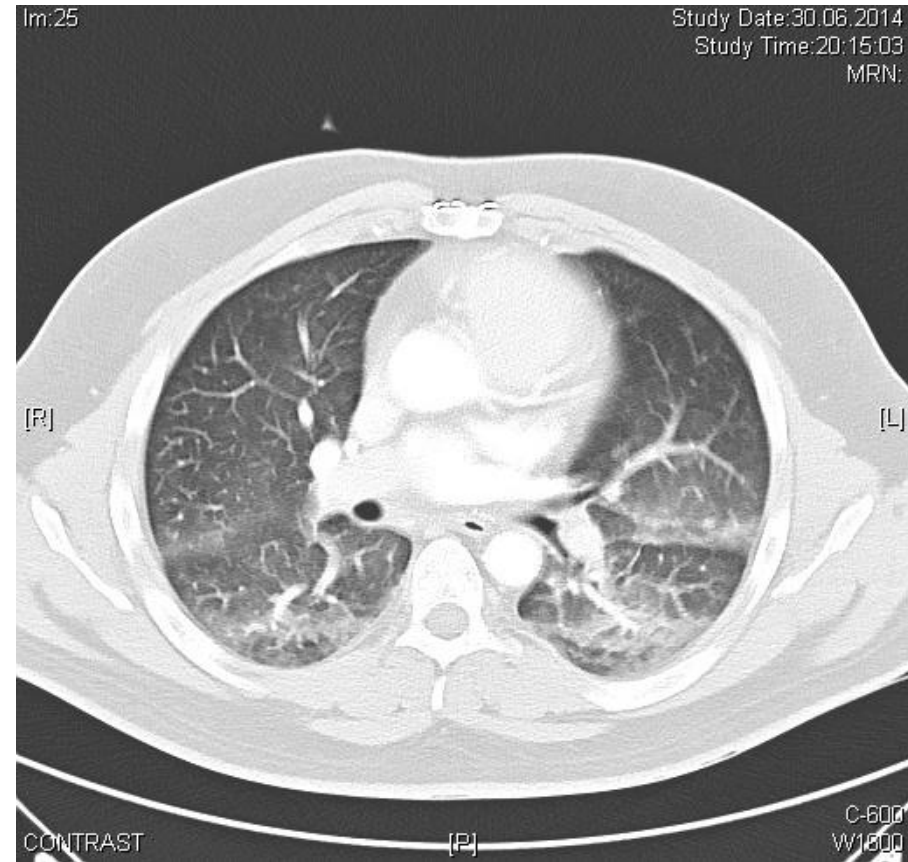


Anatomical M-mode shows premature mitral valve closure, 155 ms before the QRS complex onset

Computed tomography



Contrast CT ruled out an acute aortic dissection or rupture

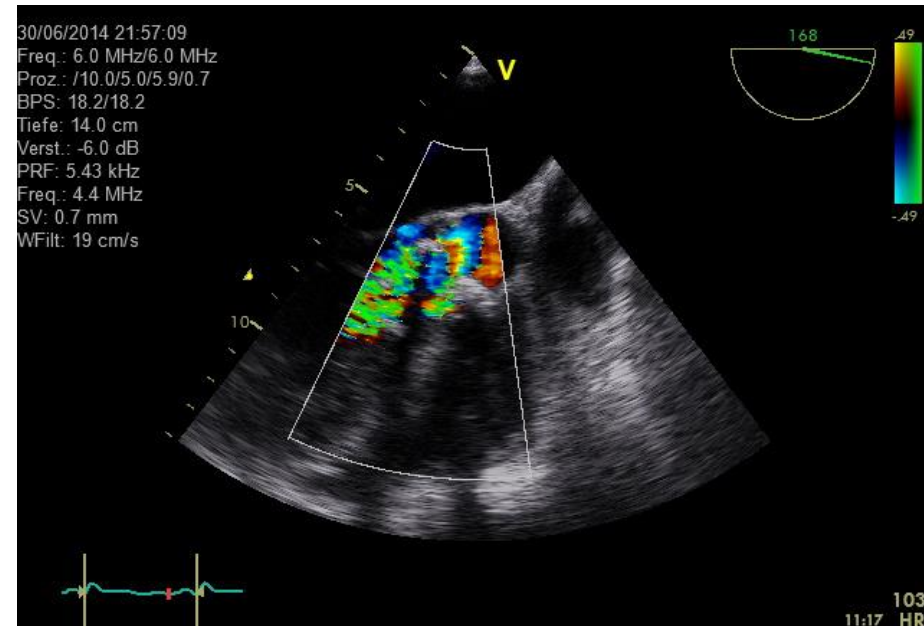


In the lung windows bilateral alveolar infiltrates were detected

Transesophageal echocardiography



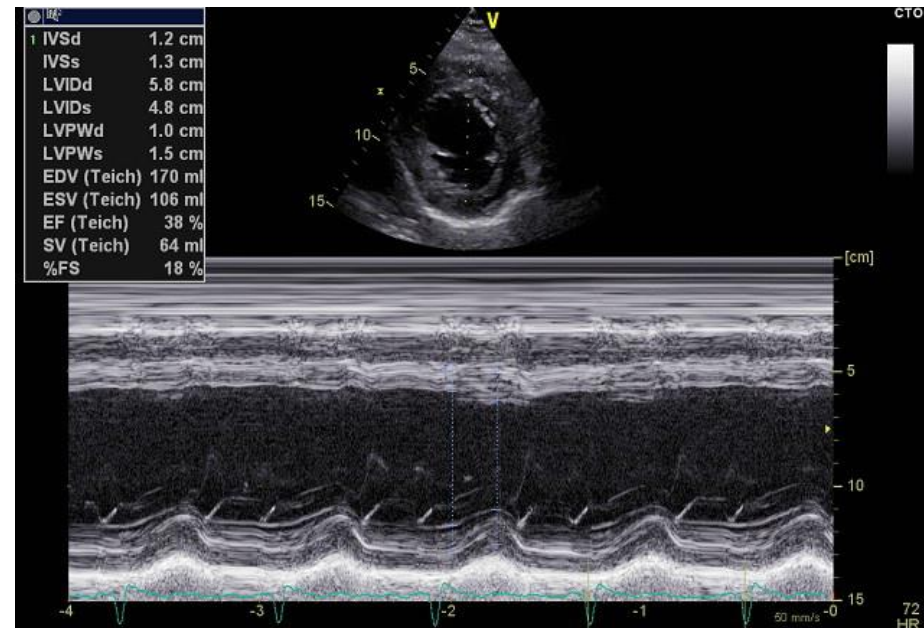
5 chamber view showing an echogenic structure prolapsing in the left ventricular outflow tract (LVOT)



Colour Doppler long axis view: a broad regurgitation jet in the LVOT

Verlauf

- **Emergency surgery:** AVR with a mechanical bileaflet prosthesis
- **Acute kidney injury** after emergency surgery requiring dialysis for ≈ 8 days
- Extubation on day 10 after surgery
- **Histopathology** of the aortic valve resection: Degenerative aortopathy with active endocarditis
- **Microbiology:** Cell culture and PCR of the aortic valve were negative
- Moderate depressed left ventricular systolic function, EF 35 %
- Discharge on day 20 after surgery
- Neurological rehabilitation will follow because of mild-to-moderate cognitive impairment



M-mode echocardiography before hospital discharge

Conclusions

- In patients with prosthetic heart valves or previous valvular surgery and signs of acute/decompensated heart failure, an emergency echocardiography is indicated due to the risk of valve-related complications
- Mechanical aortic valve complications, i.e. rupture of cusp(s) from the aortic wall due to endocarditis, should be a differential diagnosis in patients with acute severe chest pain