

Cause of dyspnea and collapse in a young adult

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19 years old girl

No history of any serious disease, just premenstrual headache
Medication: hormonal contraceptives, NSAIDs

15.1.2010 Collapse, tachycardia, hypotension, cyanosis, dyspnea

Admission to regional hospital:

Blood pressure: 80-90/45-60 mmHg Heart rate: 100-126/min SatO₂ 88-92%

Na 137-146 mmol/l
K 3,8-5,0 mmol/l
Cl 97-108 mmol/l
Urea 2,0-6.7 mmol/l
Crea 42-80 umol/l
0,48-0,9 mg/dl
Tot.prot. 65-85 g/l
Gluc 3,3-5,8 mmol/l
Osmol 285-295 mmol/l
CK 0,4-3,2 ug/l
CK-MB m 0-3,4 ug/l
Troponin I 0-0,3 ug/l
CRP <0,5 mg/l
HCO₃ 12-18 mmol/l

Serum: Na 137, K 4, Cl 106, Ca 1,89, urea 3,45, creatinine 76,5/ 0,87 , total protein 44, glucose 6,9, osmolality 274, creatinase 1,54, CK-MB mass 3,08. **1,3,8** Trop I 0,724, CRP 23 mg/l, no pathology in liver tests; **Blood count:** WBC 19,7, RBC 5,30, HGB 15,7, HCT 47,4, MCV 89,4, MCH 29,6, MCHC 33,10, PLT 168; differential count: segments 79, lymphocytes 9, Monocytes 12, Eosinophiles 0,00, Basofiles 1,0; **Urine:** semiquant.: prot. 4, pH 6,0, glu 0, ketones 0, bilirubin 0, urobilinogen: 0,, leukocytes 68/ul erythrocytes 313/ul

Capillary Astrup: pH 7,428, pCO₂ 3,76, pO₂ 8,06, HCO₃ 18,2 mmol/l, BEb = 4,5 ;

ECG: sinus rhythm, HR 100/min EA 90°, PQ 160 ms, QRS 80 ms, QT 320 ms, 2 X SVE

Echocardiography: physiologic basic findings (not much representative)

Ultrasound of the abdomen no pathology

WBC 4,0-10,0 x10⁹/l
RBC 4,2-5,4 x10¹²/l
HGB 12-16 g/l
HCT 0,37-0,46
PLT 140-440 x10⁹/l

16.1.2010 Persistent haemodynamic instability

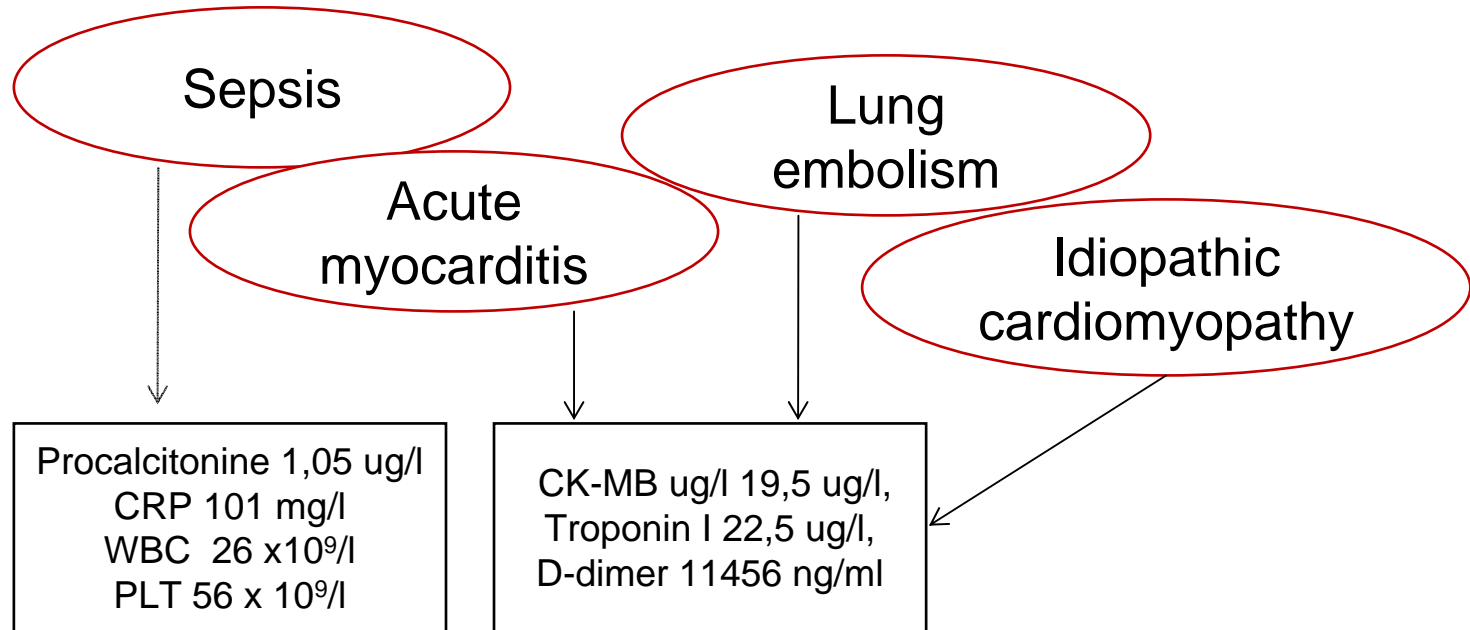
Oliguria 0,6 ml/kg/h

Referred to university hospital

16.1.2010

ICU

Ethiology of haemodynamic instability in a 19 years old patient



Procalcit. < 0,05 ug/l
D-dimer <250 ng/ml
CK-MB m 0-3,4 ug/l
Troponin I 0-0,3 ug/l
CRP <0,5 mg/l
WBC 4,0-10,0 x10⁹/l
PLT 140 - 440 x10⁹/l

Procalcitonine 1,05 ug/l
CRP 101 mg/l
WBC 26 x10⁹/l
PLT 56 x 10⁹/l

CK-MB ug/l 19,5 ug/l,
Troponin I 22,5 ug/l,
D-dimer 11456 ng/ml

ECG: sinus rhythm, rate 116/min, EA intermediar, PQ 160 ms, QRS 80 ms, **RBBB**
Echocardiography: serious **dilatation of right cardiac parts**, especially of the right ventricle, right ventricle overload, serious **right ventricular dysfunction**, mild **pulmonary hypertension**, no evidence of v.cava inf. dilatation, no evidence of thrombosis in the pulmonary artery stem, paradox septal motion.

Pulmonary CT angiography
Massive bilateral pulmonary embolisation

16.1.2010

ICU

Ethiology of haemodynamic instability in a 19 years old patient

Lung embolism

???

Hormonal contraception

Nephrotic syndrome

Albumin 35-53 g/l
Tot.prot. 65-85 g/l
Fibrinogen 1,8-3,5 g/l
Tot.chol. 3,5-5,0

24-h proteinuria 16 g, Albumin 13 g/l, Total protein 22,4 g/l,
Total cholesterol 5,1 mmol/l, Fibrinogen 3,28 g/l,
perimaleolar and periorbital oedema

16.1.2010

ICU

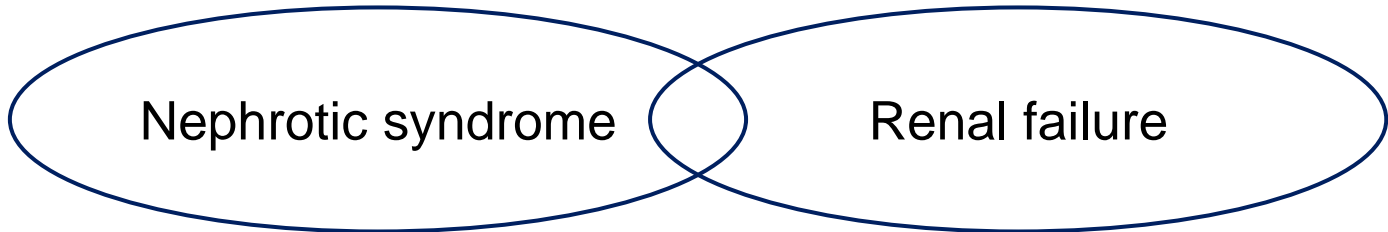
Life-threatening lung embolism in nephrotic syndrome

Anuric renal failure

S-creatinine: 180.....207.....270.....332...442....530 umol/l
 2,04...2,34...3,05...3,76...5,0...6,0 mg/dl
 eGFRMDRD: 0,52...0,39...0,33...0,26...0,19...0,10 ml/s/1,73m²
 + anuria

23.1.2010

Start of hemodialysis



- | | | |
|-------------------------------|--------|---------------------|
| NSAIDs/membranous GN | —————> | Vasomotoric RF/ ATN |
| Membranoproliferative GN /SLE | —————> | RPGN - SLE |
| MCHD/FSGS | —————> | x |
| Membranous GN/SLE | —————> | x |
| x | —————> | ATN in hypotension |

16.1.2010

ICU

Life-threatening lung embolism

Nephrotic
syndrome

Renal failure

18.1.2010

→ Immunology

S-IgG 6,7-15 g/l
S-IgA 0,9-3,7 g/l
S-IgM 0,6-2,2 g/l

S-IgG 1,92 g/l, S-IgA 0,74 g/l, S-IgM 0,57 g/l, S-IgE 50,9 IU/ml
S-C3 0,16 g/l, S-C4 0,16 g/l S-CIK 15 arb.j.,
S-ANA negative, S ANA-IgG negat., S ANA-IgA negat., S-ANA IgM negat.,
S-ds negat. S-ANCA MPO 1,00 IU/ml, S-ANCA PR3 1,1 IU/ml,
S-ASMA negat., S-GBM 0,3 IU/ml, S-AECA negat., S-ACLA 4,8 GPL/ml,
S-ENAs negative, S-ENAI 0,13 index,
S-RF IgG 13,7 IU/ml, S-RF IgA 21,0 IU/ml S-RF IgM 4,0 IU/ml

23.1.2010

Start of HD

Start of immunosuppressive therapy

Methylprednisolone 500 mg 3 x in three days+ Prednisone 50 mg/daily

9.2.2010

→ Renal biopsy

9.2.2010

ICU

Renal biopsy

Light microscopy

Glomeruli:

- limited interpretation, 2 glomeruli in renal cortex;
- no glomerular sclerosis, normal apparency;
- mesangium not widened;
- polymorphonuclears just occasionally in capilar loops

Tubuli

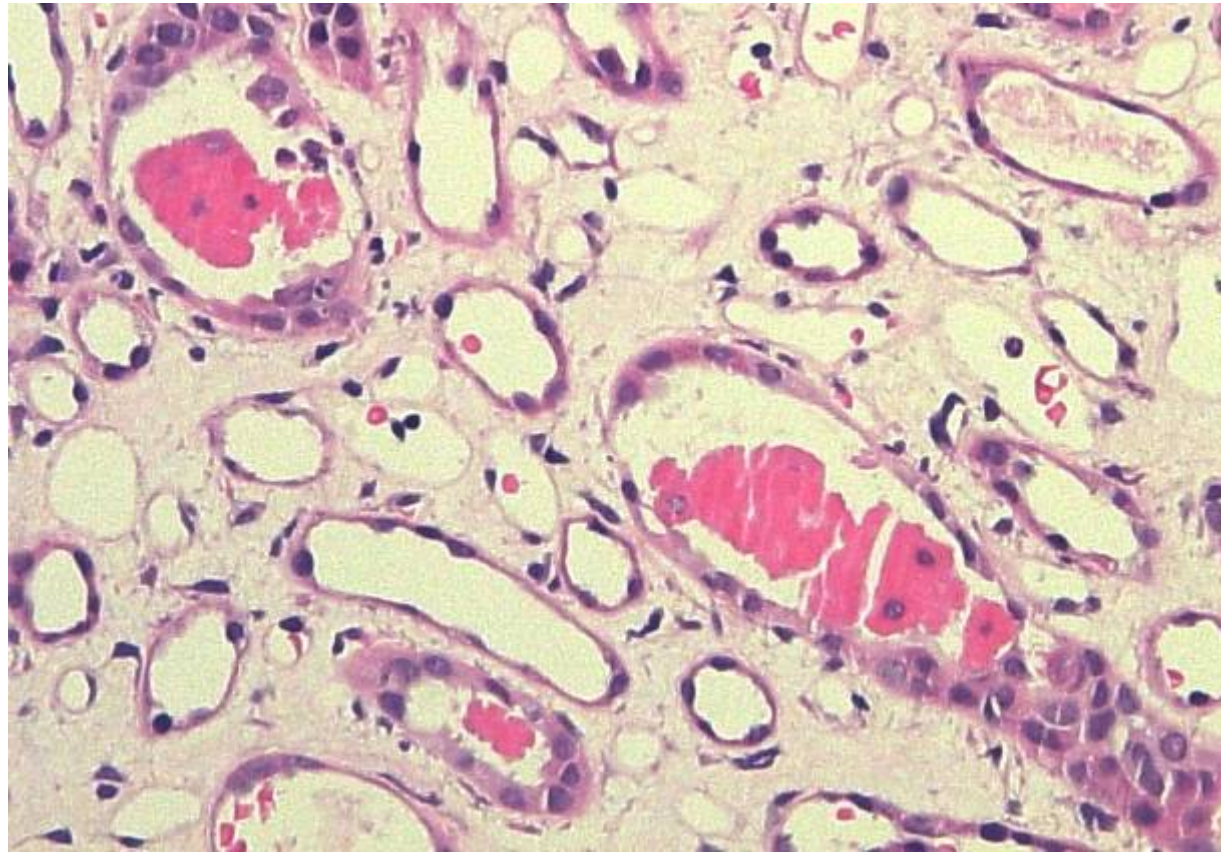
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ICU

Renal biopsy

Light microscopy

→ Tubuli



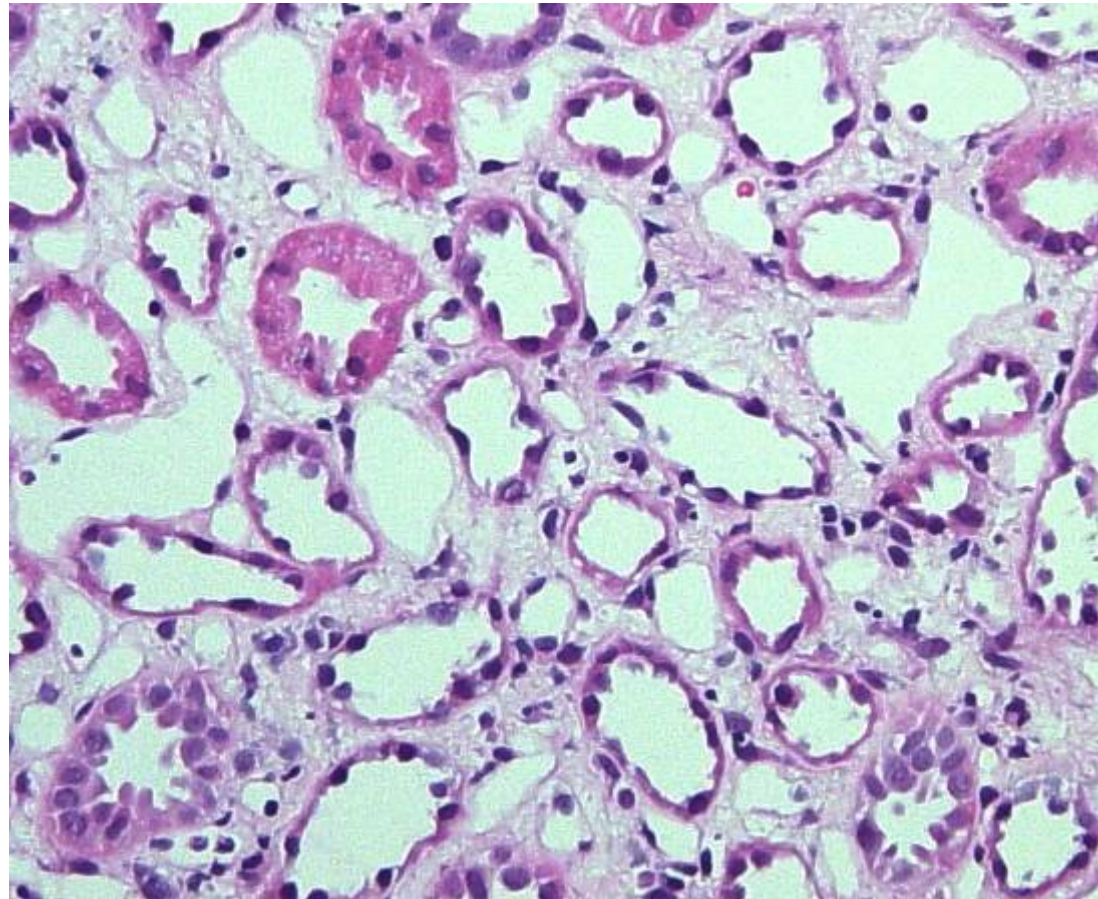
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ICU

Renal biopsy

Light microscopy

→ Tubuli



9.2.2010

ICU

Renal biopsy

Immunofluorescence

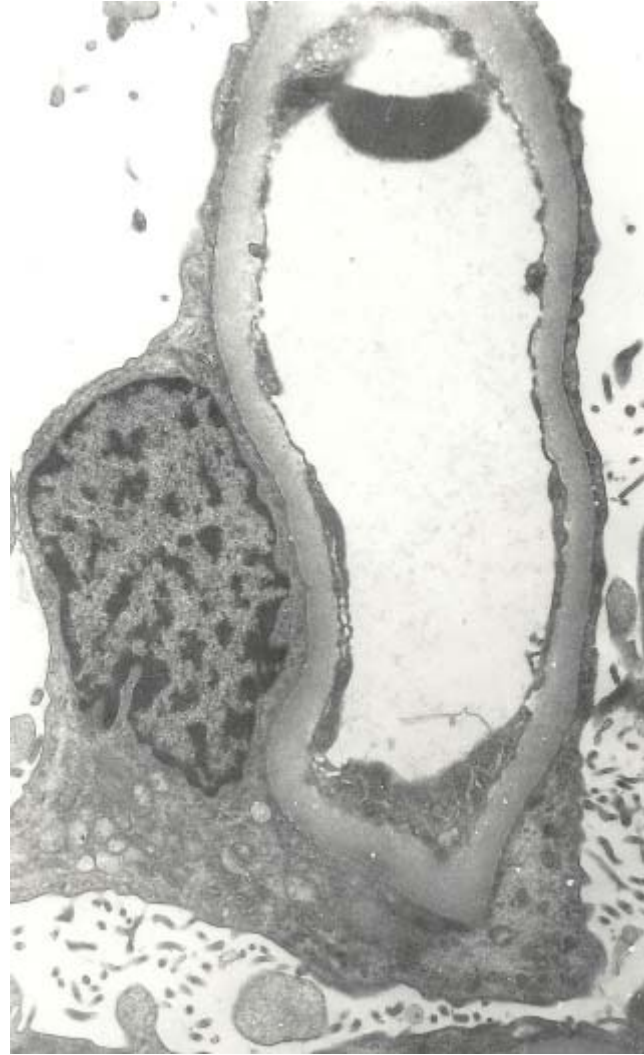
- IgG – glomeruli negative, hyaline droplets in tubuli
- IgA – glomeruli negative, cylinders positive
- IgM – some positivity in glomeruli, tubuli slightly positive
- C3 – glomeruli negative, positive hyaline droplets and cylinders
- Fb negative
- C1q negative

9.2.2010

ICU

Renal biopsy

Electron
microscopy



ICU

Life-threatening lung embolism in nephrotic syndrome

Nephrotic syndrome

Renal failure

9.2.2010

Minimal change disease and acute tubular necrosis

23. 2.2010

Standard care

End of hemodialysis

	Urea mmol/l	Crea umol/l /mg/dl	PU g/24 h	ALB g/l	TP g/l	Treatment
	29,7	205 / 2,32	10,1	22,0	37,5	prednisone 50 mg/day losartan 50 mg 1-0-1 aliskiren 150 mg ½-0-0
3.3.2010	12,0	87 / 0,99	9,1	20,3	35,2	
16.3.2010	8,0	71 / 0,80	1,2	27,0	44,0	
24.3.2010						

End of hospitalisation



Important points

**Nephrotic syndrom as an acute
life-threatening condition**

**Think of lung embolism in
haemodynamic instable young patients**

Underlying condition