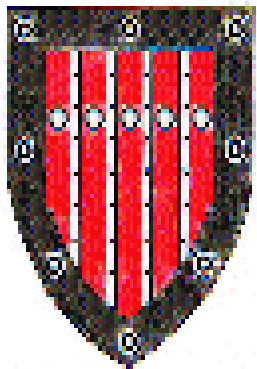


18-Year-Old Man with Respiratory Symptoms and Shock

N Engl J Med Case 9-2004;350:1236-47

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2012/6/20



NEJM

case-records study group



[CC: Chief complaint]

- ▶ 18 year old male presented to ED in shock in late December.
- ▶ Cough and progressive myalgia for 5 days



What to ask ?

[HPI: History of present illness]

- ▶ Cough and progressive myalgia
Started 5 days ago
- ▶ Had fever 3 days ago (39.4°C), but
33.9°C orally now
- ▶ Vomiting and diarrhea
- ▶ Generalized body aches
- ▶ Headache
- ▶ sharp chest pain

Past History

PAM HUGS FOSS

- ▶ Past medical problems
- ▶ Previous episodes of chief complaints
- ▶ Allergic history
- ▶ Medications
- ▶ Hospitalization (Trauma, surgery...)
- ▶ Urinary complaints
- ▶ Gastro intestinal problems
- ▶ Sleep
- ▶ Family History
- ▶ Obstetric and Gynecological History
- ▶ Sexual History
- ▶ Social History

[PMH: Past medical history]

obesity, hypercholesterolemia, acne,
and a left varicocele

[Immunization]

Received all childhood immunizations

[Allergy]

NKDA: No known drug allergy

[Social history]

lives in a college dormitory
smoke cigarettes and drink alcohol.

No recent travel

[Sexual history]

Several unprotected sexual encounters

[Sick contact]

A friend with mononucleosis one month earlier.

[Medication]

albuterol and azithromycin prescribed 3 days ago

[Family history]

His mother and sibling were healthy but obese

An uncle had died of melanoma

His grandfather had leukemia

[Physical Examinations]

[General] acutely ill and uncomfortable but was alert and responsive

[Vital Signs] Tm 33.9°C orally and 36.1°C rectally, pulse 120, RR 16–32, BP 140/61, SpO₂ 99% in room air

[Physical Examinations]

- ▶ Lungs were clear.
- ▶ Neck was supple.
- ▶ Heart was tachycardia, but regular rhythm no M/R/G
- ▶ Tenderness to palpation over the spine and the muscles of the back and extremities.
- ▶ Skin was mottled without petechia
- ▶ Extremities were cool and clammy with cyanosis.
- ▶ The rest of the examination was normal

Problem list

- ▶ Low temperature
- ▶ Generalized body aches
- ▶ GI (gastrointestinal): vomiting and diarrhea
- ▶ Respiratory: cough
- ▶ CV (cardiovascular) : sharp chest pain, tachycardia
- ▶ Extremities: mottled skin, cold and cyanosis

What **tests or diagnostic workups**
you should do?

Diagnostc workup

- ▶ Hematology Lab
- ▶ Chemistry Lab
- ▶ Blood gas
- ▶ Chest X-ray
- ▶ EKG (Electrocardiogram)
- ▶ Transthoracic Echocardiogram
- ▶ Blood, urine and sputum cultures for bacteria and virus
- ▶ Triplex sonography of lower extremities
- ▶ Urinalysis
- ▶ Rapid influenza screening

Table 1. Hematology Laboratory Data.

Variable	Hours after Presentation			
	0-1	2	13	26
Hematocrit (%)	68.5 ↑	56.5 ↑	52.5 ↑	46.5
Hemoglobin (g/dl)		19.4 ↑	17.5 ↑	16.2
White cells (per mm ³)	26,400 ↑	22,600 ↑	14,700 ↑	11,300 ↑
Neutrophils (%)	85 ↑	87 ↑	76 ↑	71 ↑
Lymphocytes (%)	9 ↓	7 ↓	16 ↓	18 ↓
Monocytes (%)	5 ↓	6 ↓	8 ↑	6
Eosinophils (%)	0	0	0	0
Basophils (%)	1	0	0	0
Band forms (%)				5 ↑
Platelets (per mm ³)	253,000	210,000	155,000	57,000 ↓
Mean corpuscular volume (μm ³)		85	89	85
Red-cell morphology		Normal		
Prothrombin time (sec)		19.2 ↑		28.9 ↑
Partial-thromboplastin time (sec)		34.1		
D-Dimer (ng/ml)*		1550 ↑		3202 ↑
Fibrinogen (mg/dl)		616 ↑		324
Erythrocyte sedimentation rate (mm/hr)			1	

Table 2. Chemistry Laboratory Data.*

Variable	Hours after Presentation				
	2	13	26	28	31
Glucose (mg/dl)	151 ↑	324 ↑	208 ↑	160 ↑	90
Total bilirubin (mg/dl)	0.2		0.9	0.5	1.2
Direct bilirubin (mg/dl)	<0.1		0.4 ↑↓	0.2	0.5 ↑
Calcium (mg/dl)	7.9 ↓	7.3 ↓	7.4 ↓		
Phosphorus (mg/dl)	5.7 ↑	6.3 ↑	3.9		
Protein (g/dl)	5.5 ↓	3.9 ↓	4.1 ↓		
Albumin (g/dl)	2.3 ↓	1.6 ↓	1.9 ↓		
Globulin (g/dl)	3.2	2.3	2.2		
Sodium (mmol/liter)	126 ↓	125 ↓	124 ↓	125 ↓	133 ↓
Potassium (mmol/liter)	3.8	3.5	3.7	4.6	4.9 ↑
Chloride (mmol/liter)	97 ↓	88 ↓	95 ↓	96 ↓	98 ↓
Carbon dioxide (mmol/liter)	15.7 ↓	8.4 ↓		19.2 ↓	27.6 ↓
Lactic acid (mmol/liter)				7.8	
Urea nitrogen (mg/dl)	26 ↑	27 ↑	30 ↑	33 ↑	35 ↑
Creatinine (mg/dl)	1.3 ↑	1.4 ↑	1.9 ↑	2.6 ↑	2.5 ↑
Creatine kinase (U/liter)	10,875 ↑		21,956 ↑		
Creatine kinase MB isoenzymes (ng/ml) †	303.5 ↑		178.0 ↑		
Troponin T (ng/ml) ‡	0.04		1.71 ↑		
Alkaline phosphatase (U/liter)	67 ↓		61 ↓		
Aspartate aminotransferase (U/liter)	178 ↑		16,800 ↑		
Alanine aminotransferase (U/liter)	25		4,662 ↑		

Table 3. Blood Gas Results and Respiratory Variables.

Variable	Hours after Presentation										
	5	6	7	8*	11	14	18	26	28	31	
Inspired oxygen†	2	5	5	1.0	0.5	0.5	0.5	0.5	0.7	0.7	
Partial pressure of arterial oxygen (mm Hg)	80	61 ↓	71 ↓	350	152	145	105	96	98	59 ↓	
Partial pressure of arterial carbon dioxide (mm Hg)	41	44	54 ↑	46 ↑	35 ↓	31 ↓	36	38	49 ↑	52 ↑	
Arterial pH	7.23 ↓	7.22 ↓	7.2 ↓	7.12 ↓	7.26 ↓	7.21 ↓	7.30 ↓	7.33 ↓	7.25 ↓	7.39 ↓	
Bicarbonate (mmol/liter)	17 ↓	18 ↓	20 ↓	15 ↓		12 ↓	17 ↓	19 ↓	20 ↓	31	
Oxygen saturation	98	94	90	100	100	99	100	98	96	96	
Positive end-expiratory pressure (cm of H ₂ O)				6		6	6	6			
Peak inspiratory pressure (cm of H ₂ O)				22		25	25	25			

* The trachea was intubated at hour 8.

† Values at hours 5, 6, and 7 are liters per minute by nasal cannula; values at hour 8 and after are the fraction of inspired oxygen.

Table 4. Urinalysis.

Variable	Hours after Presentation	
	3	15
Color (normal, yellow)		Yellow
Turbidity (normal, clear)		Turbid ↑
Glucose (normal, negative)	Negative	1+ ↑
Bilirubin		Negative
Ketones	Negative	Negative
Specific gravity (normal, 1.001–1.035)	>1.030 ↑	1.025
Occult blood	3+ ↑	3+ ↑
pH (normal, 5.0–9.0)	5	5
Albumin	3+ ↑	2+ ↑
Urobilinogen		Negative
Nitrites	Negative	Negative
Red cells (normal, 0–2/ high-power field)	None	>100 ↑
White cells (normal, 0–2/ high-power field)	3–5	50–100 ↑
Bacteria	Many ↑	Many ↑
Hyaline cast (normal, 0–5/ high-power field)	3–5	None
Granular casts	0–2	0–2
Squamous cells	Negative	Many ↑



Figure 1. Chest Radiographs.

A chest radiograph on admission (Panel A) reveals clear lungs and a normal heart and mediastinum. A portable chest radiograph on the second hospital day (Panel B) demonstrates an endotracheal tube and nasogastric tube in place. The lung volumes are lower. The cardiac silhouette is slightly larger, and there is indistinctness of the perihilar vessels.

EKG(Electrocardiogram)

- ▶ EKG showed a rate of 118 beats per minute, a PR interval of 125 msec, QRS duration of 88 msec, QT of 292 msec, corrected QT of 409 msec, and ST-segment changes.
- ▶ **These are consistent with pericarditis.**

Rapid influenza screening of a nasal swab

▶ Negative.

Triplex sonography of the lower extremities

- ▶ No evidence of DVT(deep venous thromboses)

Echocardiogram

- ▶ depressed biventricular function and diffusely hypokinetic ventricles
- ▶ Ejection fraction is 40 percent.
- ▶ A small pericardial effusion was seen posteriorly and at the apex.
- ▶ No significant mitral or aortic regurgitation.
- ▶ an increase in the thickness of both the left and right ventricular walls

According to the tests and history

- ▶ Chief Complaint is **Respiratory** symptom.
- ▶ He had clinical evidence of
 - Shock
 - Rhabdomyolysis
 - Acute renal failure
 - Myopericarditis