Ο ασθενής με ρευματολογικά νοσήματα στη ΜΕΘ

Κονδύλη Ευμορφία

Αναπλ. Καθ Εντατικής Ιατρικής ΠΚ. – ΜΕΘ ΠΑΓΝΗ

- Various life-threatening conditions requiring ICU management can occur at any stage of the SRD course.

- 25% of patients with SRDs need ICU admission when presenting to the ED, and up to one-third may require life sustaining support.

Clinical case

- A 49y female presented with complaints of progressive dyspnea and productive cough and fever (T 39o C) the last 3 days
- Previous medical history SEL with a diagnosis 2 years before . Nephritis 5months before .
- Current therapy plaquenil –prednisolone 5mg /day

Clinical examinations

- Pallor , HR 110/min BP 95/60 mmHg , T 39
- **Respiratory system examination**

Respiratory rate of 30/minute along with use of accessory respiratory muscles and On chest auscultation there were inspiratory crepitations along with normal vesicular breath sounds.

ABGs

SO2 78% on room air.

ABGs

FiO2 0.21

PH - 7.34

PO2 -45 mm Hg

PCO2 - 32 mm Hg

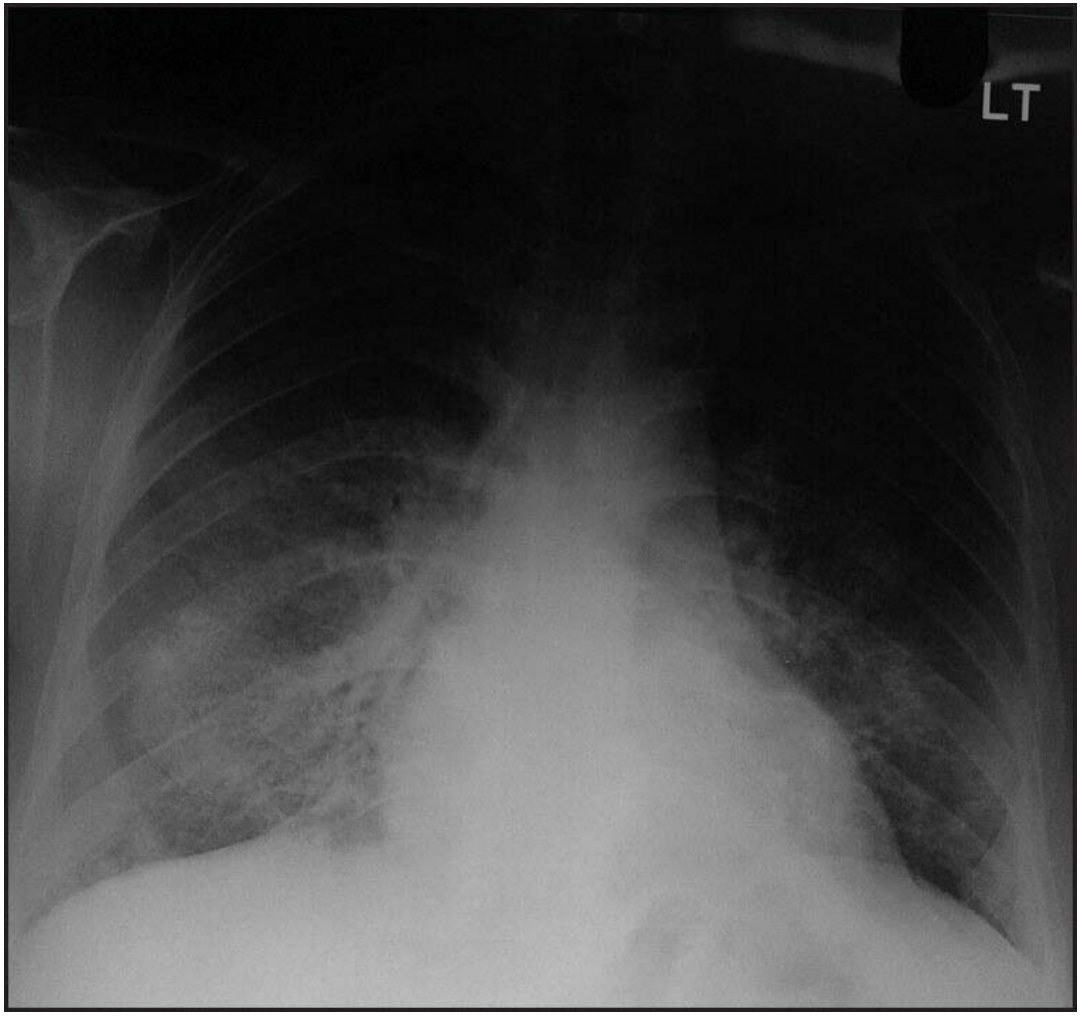
HCO3 22 mm Hg

Lac 32

Laboratory tests

- hemoglobin = 6 gm/dl) a mildly elevated total leukocyte count
- WBC = 17000/mm^3 /neut 85%
- ESR 60 mm/hr.
- Liver and renal function tests were within normal limits as was the urinary routine/microscopy.
- Coagulation profile and platelet counts were within normal limits.

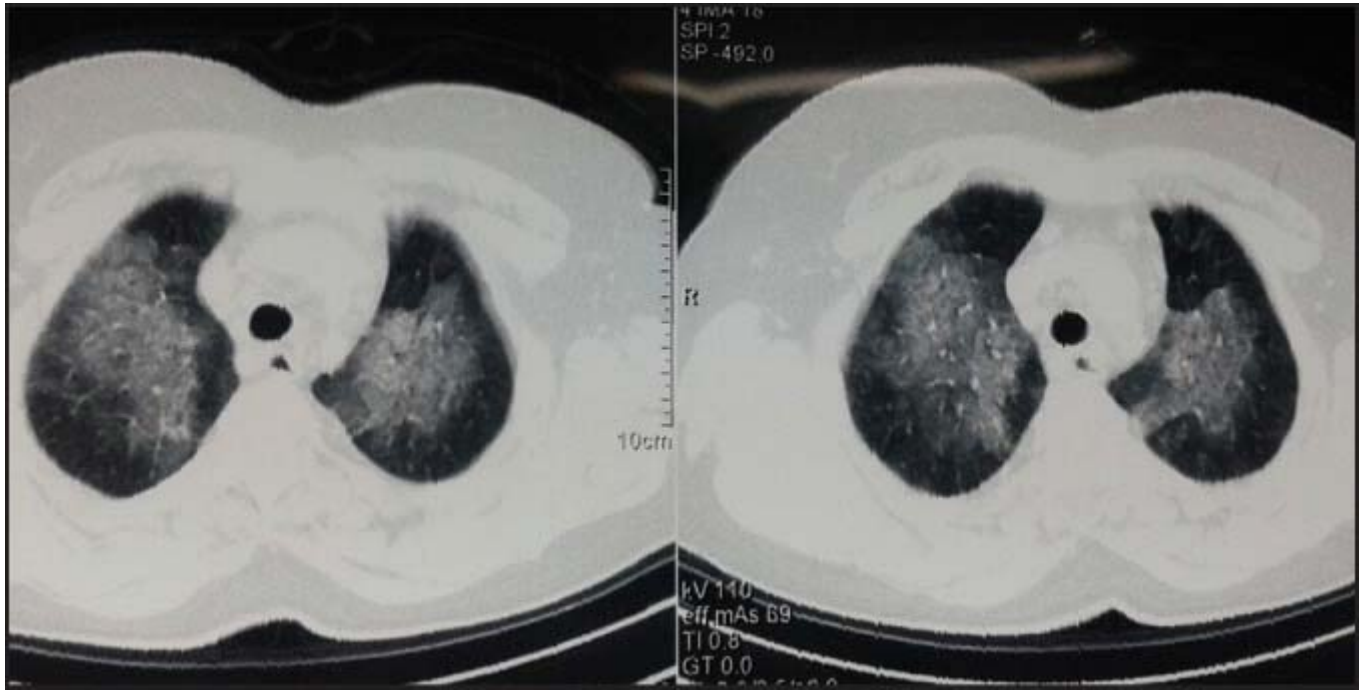
Chest X-ray



ADMISSION in ICU

- NIMV
- FAILURE on NIMV - institution of controlled mechanical ventilation

CT



Bilateral alveolar shadows predominantly in perihilar distribution

Causes of respiratory failure

- Infections
- ARDS
- Lupus Pneumonitis
- Alveolar hemorrhage
- Cardiogenic pulmonary edema

- U/S καρδιάς

Normal systolic function EF 50%

Mild diastolic dysfunction

Mild pulmonary hypertension (estimated PAP 32mmHg

BAL - bronchoscopy

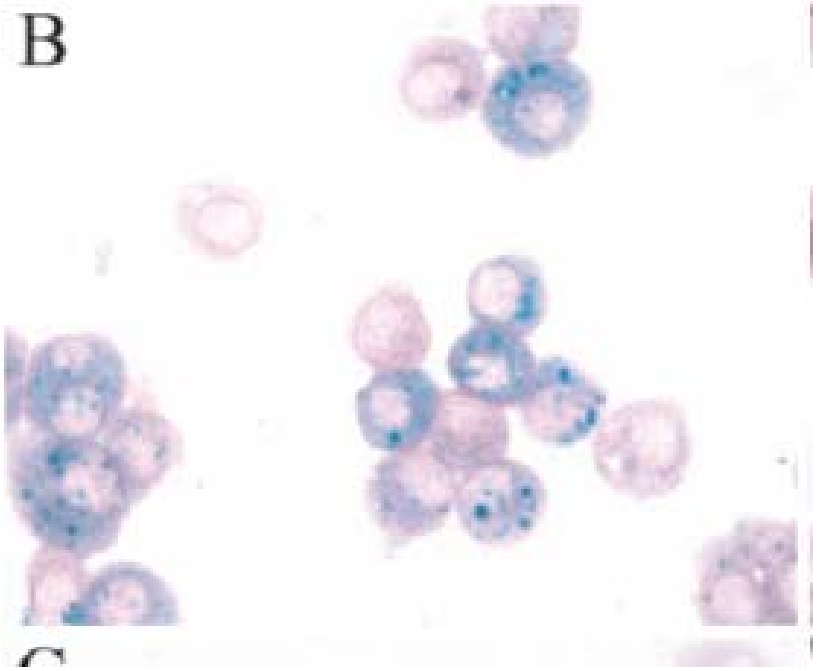
Infections from

A. Common bacteria

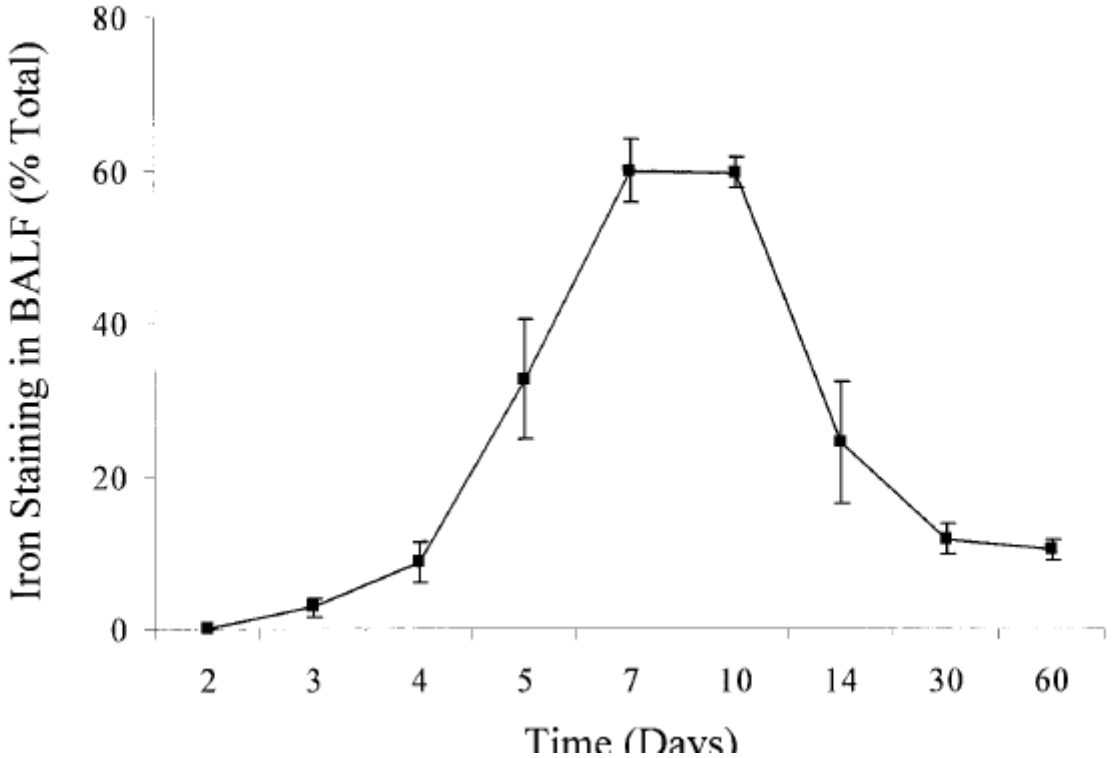
B. Opportunistic pulmonary infections

P. carinni , viral infections

Bal cytology

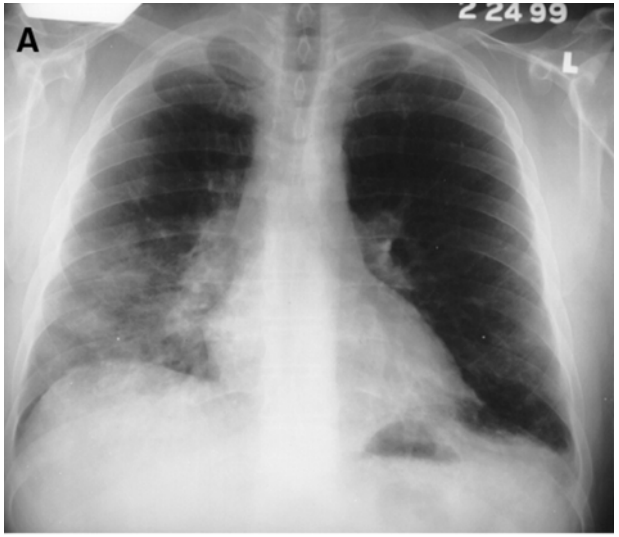


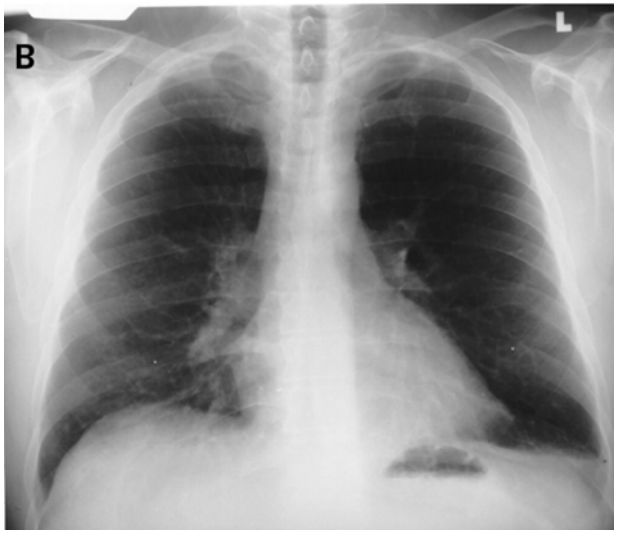
Hemosiderin- laden macrophages



Chest. 2001;120(6):2013-2020.

Diagnostic tests lupus pneumonitis





- Diagnosis of exclusion
- Fever tachypnea ,hypoxemia hemoptysis

Alveolar Hemorrhage in SEL

Alveolar hemorrhage is a rare but potentially catastrophic complication of SLE.

Mortality has ranged from 50% to 92%

Table 3—*Therapies Used, Survival, and Outcomes of SLE-Associated AH (Current and Selected Case Series From 1985 to Present)**

Variables	Current Series	Abud-Mendoza et al[6]	Myers et al[7]	Schwab et al[8]	Zamora et al[9]	Barile et al[10]	Koh et al[11]	Liu et al[12]
Acute treatment, % of episodes								
CS	100	83	100	100	78	100	100	100
CYC	70	8	25	62	68	5	80	15
AZA	0	16	0	0	26	0	0	—
PAP	40	—	25	12	36	5	40	—
VENT	30	—	75	50	68	59	80	77
ABX	90	—	—	75	—	94	100	—
Survival, %	100	8	50	75	46	38	60	23
Mean AH-free Follow-up, mo	7.8	—	—	20	30	2	22	—
Range, mo	1–22	—	—	0.5–48	1–108	0.1–8	3–108	—

*CS = corticosteroids; PAP = plasmapheresis; VENT = mechanical ventilation; ABX = antibodies; see Table 1 for abbreviations.

Alveolar Hemorrhage in SEL

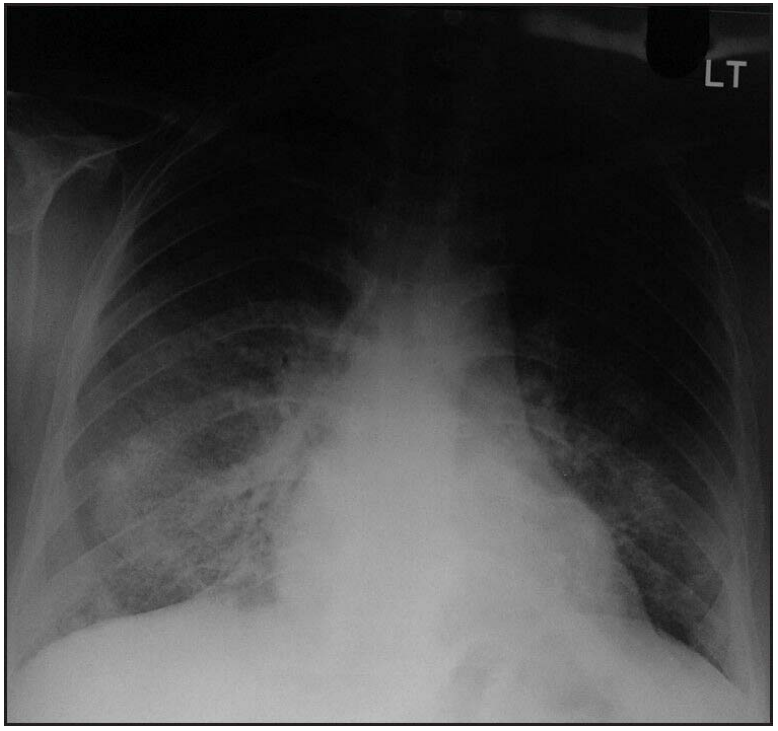
- It may occur early or late in disease evolution.
- Extrapulmonary disease may be minimal

Clinical presentation

Variables	Current Series	Abud-Mendoza et al[6]	Myers and Katzenstein[7]	Schwab et al[8]	Zamora et al[9]	Barile et al[10]	Koh et al[11]	Liu et al[12]
Patient characteristics								
Patients, No.	7	12	4	8	15	34	10	13
% of SLE cohort	1	1.6	—	1.4	3.7	5.4	1.4	4
Male/female, No.	1/6	0/12	3/1	2/6	5/10	2/32	2/8	1/12
Mean age, yr	31.1	23	29	37.8	30.1	34.5	26.5	26
Range, yr	19–44	16–40	13–51	17–54	19–44	—	13–44	10–50
Mean duration of SLE, yr	4.5	2	—	2.3	2.5	14.1	1.8	1.9
Range, yr	2 wk–19 yr	0.1–5	—	0.1–7	0–8	—	0–5	4 wk–5 yr
(+) anti-dsDNA, %	43	25	75	87.5	—	88	50	61
Presenting signs and symptoms of AH, % of episodes								
Hemoptysis	50	25	75	100	42	58	30	84
New radiograph infiltrates	100	83	100	87	100	100	100	100
Alveolo-interstitial	80	83	100	—	100	—	100	—
Lobar	20	—	0	12	0	—	0	—
Bilateral	80	—	100	—	100	—	—	100
Unilateral	20	—	0	12	0	—	—	—
Pleural effusions	30	—	—	—	37	—	—	—
Anemia	90	100	—	75	94	91	100	100
Dyspnea	100	25	87	73	—	100	—	100
Fever	80	25	25	100	26	—	90	54
Chest pain	30	—	—	—	—	—	20	—
Extrapulmonary signs and symptoms accompanying AH, % of episodes								
Renal-nephritis	70	41	—	62	93	32	40	100
Hematologic								
Leukopenia	30	50	—	—	0	—	20	23
Thrombocytopenia	20	—	—	—	31	—	—	61
AIHA	—	—	—	—	—	—	—	—
Skin-mucositis	0	41	—	62	73	47	70	38
Arthralgias-arthritis	10	16	—	62	15	44	30	15
Neuropsychiatric lupus	10	58	—	37	47	14	20	61
Low complements	83	25	75	100	—	—	70	84

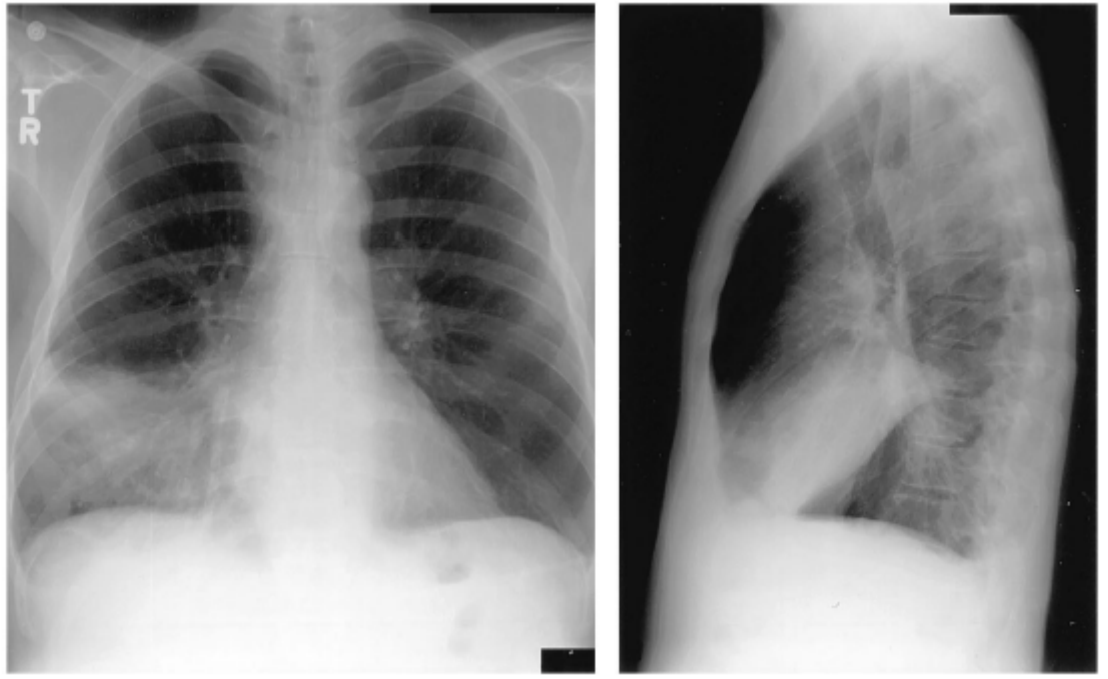
*— = not stated; AIHA = autoimmune hemolytic anemia; see Table 1 for abbreviation.

Chest X-ray common patterns



- The most common radiographic pattern is bilateral alveolar-interstitial infiltrates
- (82%).
- Unilateral densities, which could be easily mistaken for lobar pneumonia,
- Pleural infusion 27%

- Posteroanterior and lateral chest radiograph demonstrating alveolal hemorrhage presenting as a right middle lobe consolidation.



Therapy

- In general, IV methylprednisolone pulses are were combined with cyclophosphamide, either simultaneously or after leukocyte counts in leukopenic patients improved.
- The necessity for such high doses of corticosteroids for AH in SLE remains to be proven, but IV methylprednisolone
- Pulses have been used with success in other immune AH syndromes.

Outcome of critically ill patients with SEL

Reason for hospitalization

Annual rate of hospitalizations for SLE was estimated as between 8.6% and 18.9%-
Mortality 5%

Reason for hospitalization	Percentage of patients
SLE flare[a]	17.5
Types of flare (*n*)	
Renal (10)	
Haematological (10)	
Serositis (8)	
Neurological (6)	
Mucocutaneous (3)	
Pulmonary haemorrhage (1)	
Infection	16.2
Types of infection (*n*)	
Vasculitic ulcer infection (1)	
Septic joint (2)	
Haemodialysis line sepsis (4)	
Cellulitis (2)	
Urosepsis/urinary tract infection (4)	
Pneumonia (6)	
Meningitis (1)	
Abscess (2)	
Bacteraemia secondary to i.v. drug use (1)	
Bacteraemia secondary to infected pacemaker wire (1)	
Adverse drug reaction	8.1
Types of reactions (*n*)	
Febrile neutropenia from cyclophosphamide (1)	
Angioedema from ACE-I (1)	
MTX-related hepatitis (1)	
NSAID-induced lower gastrointestinal bleed (1)	
Hemicolectomy from NSAID-induced LGIB (1)	
LGIB from supratheurapeutic international normalized ratio (2)	
Anti-coagulation-related haematoma (1)	
Plaquenil-induced myopathy (1)	
Remicade transfusion reaction (1)	
CellCept-induced anaemia (1)	
Avascular necrosis secondary to prednisone (2)	

June Lee Reumatology 2013

Reason for ICU admission

- 7% of hospitalized patients admitted in ICU
- Acute respiratory failure was the most common reason

Length of stay 18 day

Mortality 27%

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ICU Mortality in SEL patients

Table 2
Autoimmune diseases in the intensive care unit. Literature review of mortality in case series reports that only included patients with a specific AD.

Author [reference]	Year	n	Mean age (years)	Years revised	AD diagnosis (n)	Mortality severity indexes	In-ICU mo
Systemic lupus erythematosus							
Ansell et al. [19]	1996	n = 30	29	11	SLE (30)	APACHE II (mean: 18)	47
Williams et al. [20]	2001	n = 61 (76 admissions)	33	15	SLE (24) SLE + APS (36) APS (1)	APACHE II (mean: 22.1; survivors: 20; nonsurvivors: 32)	28
Alzeer et al. [21]	2004	n = 48	27.5 (survivors: 27; nonsurvivors: 35.7)	5	SLE (48)	APACHE II (>20 was associated with mortality)	29.2
Whitelaw et al. [22]	2004	n = 14	27.5	8	SLE (14)		79
Hsu et al. [23]	2004	n = 51 (60 admissions)	29	9	SLE (51)	APACHE II (mean: 19)	47
Vásquez et al. [24]	2007	n = 21	26	5	SLE (21)	APACHE II (mean: 16.71)	57.69
Ñamendys et al. [25]	2008	n = 104	32.4	11	SLE (104)	APACHE II (mean: 19.7; survivors: 18.2; nonsurvivors: 22.6) SLEDAI (mean: 11.14)	32.7
Couto et al. [26]	2008	n = 50	30.3	3	SLE (50)	APACHE II (mean: 19.29) SLEDAI (mean: 15)	29.4
Feng et al. [27]	2010	n = 58	42.6	5	SLE (58)	APACHE II (mean: 20.1; survivors: 17.2; nonsurvivors: 22.3)	56.9

Outcomes in Critically ill Patients With Systemic Rheumatic Disease

CAUSES OF ADMISSION SRD

Female sex	237 (65.3)
Diagnosis of SRD before first ICU admission	318 (88.1)
Time from SRD diagnosis to first ICU admission, median (IQR), y	7 (2-16)
Geographic origin	
White	146 (55.5)
African	54 (20.5)
North African	45 (17.1)
Asian	15 (5.7)
South America	3 (1.1)
At least one connective tissue disease[b]	240 (66.1)
Systemic lupus erythematous	98 (27.0)
Systemic sclerosis	64 (17.6)
Rheumatoid arthritis	35 (9.6)
Secondary Sjögren syndrome	21 (5.8)
Primary Sjögren syndrome	13 (3.6)
Inflammatory myopathies[c]	20 (5.5)
Others	12 (3.3)
Multisytemic vasculitides	95 (26.2)
ANCA-associated vasculitides	51 (14.0)
Giant cell arteritis	19 (5.2)
Mixed cryoglobulinemia	6 (1.7)
Polyarteritis nodosa	3 (0.8)
Others	19 (5.2)
Antiphospholipid syndrome	34 (9.4)
Sarcoidosis	20 (5.5)
Major comorbidities	
Cardiovascular risk factors (one or more)	168 (46.3)
Tobacco dependence	88 (24.3)
Chronic kidney disease	70 (19.3)

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No. admissions	381
SOFA at day 1	5 (3-8)
Direct admission to ICU	143 (37.9)
Life-sustaining treatments during ICU stay	
Mechanical ventilation including	217 (57.0)
First-line MIV	150 (69.1)
NIV only	29 (13.4)
NIV followed by MIV	38 (17.5)
Length, MIV-d	6 (2-11.25)
Vasopressive drugs	129 (33.9)
Length, d	2 (1-6)
Inotropic drugs	57 (15.0)
Length, d	4 (2-8)
Renal replacement therapy	107 (28.1)
Length, d	3 (1-10)
Specific treatment introduced in ICU	
Initiation of corticosteroids	62 (16.4)
Pulse	79 (20.7)
Cyclophosphamide	40 (10.5)
Plasma exchange	45 (11.8)
Rituximab	15 (3.9)
IVIG	12 (3.1)
Median duration of ICU stay, d	6.0 (3.0-12.0)
ICU mortality	80 (21.0)

CAUSES OF ADMISSION IN SRD

Variable	No. (%)	No. Missing[a]
No. admissions	381	...
Cause of admission		...
Infection	152 (39.9)	
SRD exacerbation	131 (34.4)	
Treatment-related complication	22 (5.8)	
Comorbid condition	76 (19.9)	
Respiratory failure, including[b]	216 (56.8)	1
Pneumonia	94 (44.5)	5
Pulmonary edema	50 (23.7)	...
Diffuse alveolar hemorrhage	25 (11.8)	...
CTD-ILD	14 (6.6)	...
Others	45 (21.3)	...
Shock, including	158 (41.5)	
Septic	90 (57.0)	...
Cardiogenic[c]	43 (27.2)	...
Hypovolemic	17 (10.8)	2
Others	8 (5.0)	...
AKI, including	160 (42.2)	1
Acute tubular necrosis	71 (44.9)	...
Transient AKI	36 (22.8)	...
Glomerulonephritis	28 (17.7)	1
Scleroderma renal crisis	8 (5.1)	4
Neurologic, including	75 (19.7)	
Seizures	15 (21.1)	...
Toxic	10 (14.1)	3
Stroke	9 (12.7)	...
Meningitides	6 (8.5)	8
Metabolic	3 (4.2)	...
Others	28 (39.4)	...
Vascular, including	91 (24.1)	
TTP	11 (13.3)	...
Cardiac arrest	11 (13.3)	...
Acute coronary syndrome	11 (13.3)	...
Cardiac tamponade	9 (10.8)	...
CAPS	8 (9.6)	1
Pulmonary embolism	7 (8.4)	...
Endocarditis	6 (7.2)	...
Malignant hypertension	5 (6.0)	...

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Infections

TABLE 3] Infection Details

Variable	No. (%)
No. admissions	381
Infection	152 (39.3)
Pneumonia	94
Bacteremia	17
GI tract infection	13
Urinary tract infection	10
Endocarditis	6
Central nervous system infection	6
Skin/soft-tissue infection	4
Unknown origin	2
Microbial agents	
Bacteria	69
Cocci Gram[a]	55
Clostridium difficile	4
TB	3
Listeria monocytogenes	2
Legionella pneumophila	5
Viruses	9
Fungi	18
Pneumocystis jirovecii	7
Invasive pulmonary aspergillosis	8
Candida	3
Patients with presumed infection without microbiologic documentation	65

Drug related complications

	All patients	Mortality group	Non-mortality group	p value
	n=108	n=17	n=91	
Corticosteroids (Prednisolone equivalent):				
- no corticosteroid treatment	32	3	29	0.239
- < 10 mg	38	7	31	0.573
- 10 – 20 mg	23	4	19	0.806
- > 20 mg	15	3	12	0.625
conventional DMARDs only				
- MTX	21	4	17	0.739
- Leflunomide	14	1	13	0.693
- Azathioprine	10	3	7	0.191
- others	6	0	6	0.587
Combination of conventional DMARDs				
- MTX + Leflunomide	5	0	5	1.000
- Other combinations	1	0	1	1.000
Biologics				
- Infliximab	2	0	2	1.000
- Etanercept	3	0	3	1.000
- Adalimumab	4	1	3	0.501
- Rituximab	1	1	0	0.157
Cytostatic drugs				
- cyclophosphamide	15	2	13	1.000

Outcome

Table 2. Outcomes of ICU Treatment.

Outcome	
ICU mortality	17 (16%)
Hospital mortality	22 (20%)
Reasons for fatal outcome	
Complication related to sepsis	12 (55%)
Complication related to the rheumatic disease	4 (18%)
Complication – others	6 (27%)
Cardiovascular	4 (18%)
Mesenteric ischemia	1 (4%)
Pancreatitis	1 (4%)

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Characteristics and Treatment Modalities with Respect to ICU Mortality.

	All patients n=108	Mortality group n=17	Non-mortality group n=91	p value
	n / median (range)	n / median (range)	n / median (range)	
Age	65 / 18 – 86	64 / 33 – 85	66 (16 – 86)	0.893
Gender female/male	69 / 39 (64% / 36%)	10 – 7 (59 /41%)	59/32 (65/35%)	0.415
Scores:				
Apache II	12 / 2 – 33	19 / 7 – 30	12 / 2 – 33	0.011
SAPS II	31 / 6 – 101	34 / 9 – 94	31 / 6 – 101	0.218
MODS Score	2 / 0 – 15	4 / 0 – 15	2 / 0 – 13	0.294
Treatment modalities				
Non-invasive ventilation	14 (13%)	4 (24%)	10 (11%)	0.153
Mechanical ventilation	42 (39%)	14 (82%)	28 (31%)	0.000
Renal replacement therapy	25 (23%)	13 (77%)	12 (13%)	0.000
Vasopressor therapy	47 (44%)	14 (82%)	33 (36%)	0.001
Plasma exchange therapy	9 (8%)	4 (24%)	5 (6%)	0.033

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Outcome

TABLE 5] Final Multivariate Logistic Regression for ICU Death as Admission Cause-Results From 30 Imputed Datasets

Variables	Observed Figures		Imputed Figures	
	No	Yes	OR (95% CI)	*P* Value
No. admissions	301	80	...	...
Model 1[a]				
Shock, No. (%)	97 (32.2)	61 (76.2)	3.77 (1.93-7.36)	.0001
Direct admission in ICU, No. (%)	122 (41.1)	21 (26.2)	0.52 (0.28-0.97)	.04
SOFA score, median (IQR)	4.0 (2.5-7.0)	8.5 (5.2-12.0)	1.19 (1.10-1.30)	.00005

See Table 1 and 4 legends for expansion of abbreviations.

TABLE 6] Final Multivariate Logistic Regression for SRD Exacerbation as Admission Cause-Results From 30 Imputed Datasets

Variables	SRD Exacerbation		Imputed Figures	
	No	Yes	OR (95% CI)	*P* Value
No. admissions	250	131	...	...
Model 2				
SRD diagnosis in ICU, No. (%)	2 (0.8)	41 (31.5)	42.0 (9.4-187.4)	<.00001
Age at ICU admission, median (IQR), y	63.0 (50.0-73.2)	45.0 (29.0-59.0)	0.96 (0.94-0.97)	<.00001
Shock diagnosis during ICU, No. (%)	119 (47.6)	39 (29.8)	0.39 (0.22-0.68)	.0009