Le patient oncologique au soins intensifs.
Détresse respiratoire et support ventilatoire.

AP Meert.
Institut Jules Bordet.

Epidémiologie

Acute respiratory distress syndrome in patients with malignancies

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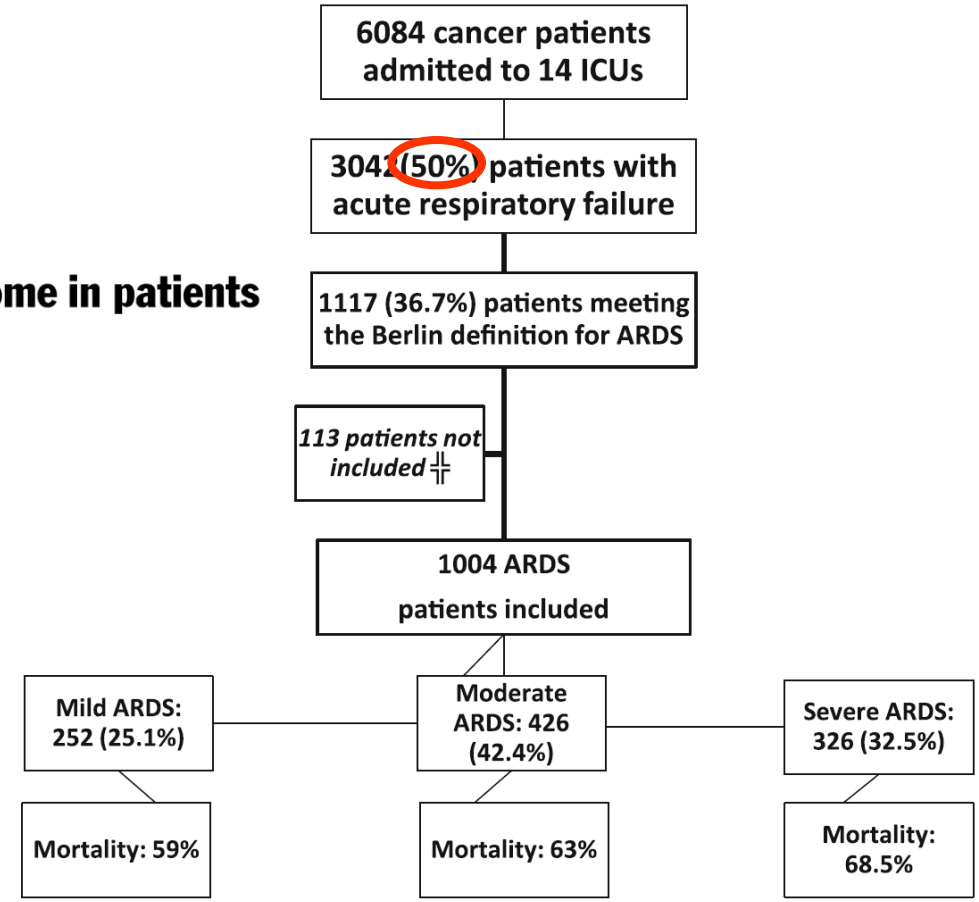

Intensive Care Med (2014) 40:1106–1114

Acute respiratory distress syndrome in patients with malignancies

Table 1 Patient characteristics at admission to the intensive care unit

Median (IQR) or *n* (%)	Study population (*n* = 1,004)	Survivors (*n* = 364)	Non-survivors (*n* = 640)	*p* value
Male gender	642 (63.9 %)	240 (65.9 %)	402 (62.8 %)	0.32
Age (years)	58 (48–67)	57 (47–67)	58 (48–67)	0.33
Underlying malignancy				
Acute leukemia	298 (29.7 %)	96 (26.4 %)	202 (31.6 %)	0.08
Non-Hodgkin's lymphoma	318 (31.7 %)	115 (31.6 %)	203 (31.7 %)	0.97
Myeloma	113 (11.3 %)	34 (9.3 %)	79 (12.3 %)	<0.0001
Solid tumor	147 (14.6 %)	60 (16.5 %)	87 (13.6 %)	0.21
Miscellaneous	95 (9.5 %)	46 (12.6 %)	48 (7.7 %)	0.01
Allogeneic BMT/HSTC[a]	115 (11.5 %)	36 (9.9 %)	79 (12.3 %)	0.23
Neutropenia	444 (44.2 %)	148 (40.7 %)	296 (46.3 %)	0.08
Stage				
Progressive	458 (45.6 %)	171 (47.0 %)	287 (44.8 %)	0.0003
Partial/complete remission	237 (23.6 %)	100 (27.4 %)	137 (21.4 %)	
Newly diagnosed	72 (7.2 %)	33 (9.1 %)	39 (6.1 %)	
Unknown	237 (23.6 %)	60 (16.5 %)	177 (27.7 %)	

Intensive Care Med (2014) 40:1106–1114

Invasive mechanical ventilation in cancer patients. Prior non invasive ventilation is a poor prognostic factor

A.P. Meert, T. Berghmans, E. Markiewicz, M. Hardy, N. Naver, M. Paesmans, J.P. Sculier

Table 1. Patient characteristics on admission

Characteristics	*Whole group*	*NIV followed by IMV*	*IMV alone*	*p-value*
Number of patients	164	41	123	
Median age, years (range)	57 (19-81)	49 (23-78)	59 (20-81)	0.008
Gender				0.86
Male, n	95	23	72	
Female, n	69	18	51	
Median SAPS II score (range)	53 (23-94)	56 (23-83)	47 (30-94)	0.002
Type of malignancy, n (%)				<0.001
Solid tumor	106 (64.6)	16 (39.0)	90 (73.2)	
Haematological malignancy	58 (35.4)	25 (61.0)	33 (26.8)	
Bone marrow /Peripheral blood stem cell transplantation, n (%)	37 (63.8)	19 (76.0)	18 (54.5)	<0.001
Cancer phase* (1,2 vs. 3,4), n (%)				0.006
Phase 1	5 (3.0)	1 (2.4)	4 (3.2)	
Phase 2	60 (36.6)	23 (56.1)	37 (30.1)	
Phase 3	89 (54.3)	17 (41.5)	72 (58.5)	
Phase 4	10 (6.1)	0 (0.0)	10 (8.1)	
Leukopenia at admission, n (%)	40 (24.4)	13 (31.7)	27 (21.9)	0.22
Median PaO_2/FiO_2 ratio (range)	215 (46-590)	183 (52-407)	230 (46-590)	0.02

Journal of BUON **16:** 160-165, 2011

Etiologies

B. Les pathologies non respiratoires

1. Les états de choc (essentiellement choc septique)
2. L'insuffisance cardiaque aiguë avec œdème pulmonaire hémodynamique
3. Le SDRA dans le cadre d'un syndrome de défaillance multiviscérale (souvent d'origine septique)
4. L'embolie pulmonaire cruorique
5. L'insuffisance ventilatoire d'origine neurologique
6. L'arrêt cardio-respiratoire

A. Les pathologies respiratoires

1. Les pneumopathies infectieuses diffuses, principalement dues à :

— Pneumocystis carinii

— Cytomégalovirus

— Aspergillose invasive

— Infections bactériennes ordinaires (Pneumocoque, Pseudomonas aeruginosa, entérobactéries,...)

— Infections virales diverses (adénovirus, virus respiratoire syncytial,...)

2. Les hémorragies

— hémorragie alvéolaire diffuse

— hémoptysie massive

3. Les atteintes néoplasiques

— obstruction et compression tumorales

— embolie de cellules tumorales et lymphangite carcinomateuse

— leucostase

— fausse déglutition et/ou fistule oesophago-respiratoire

4. Les effets toxiques du traitement

— chimiothérapie

— radiothérapie

— pneumopathie de lyse tumorale

— syndrome de l'acide rétinoïque

— pneumopathie aux leucoagglutinines

— syndrome de fuite capillaire

5. La protéinose alvéolaire secondaire

6. Les complications des greffes de moelle

— syndrome de fuite capillaire

— pneumopathie interstitielle idiopathique

— maladie veino-occlusive pulmonaire

— bronchiolite oblitérante

Acute respiratory distress syndrome in patients with malignancies

Table 2 ARDS causes, severity and treatment, and hospital mortality

Median (IQR) or *n* (%)	Study population (*n* = 1,004)	Survivors (*n* = 364)	Non-survivors (*n* = 640)	*p* value
SOFA score (31) on day-1	12 [10–13]	10 [8–12]	13 [10–13]	<0.0001
mSOFA score on day-1	9 [6–11]	7 [5–10]	9 [7–11]	<0.0001
Emergency surgery	64 (6.4 %)	34 (9.3 %)	30 (4.7 %)	0.004
Sepsis	745 (74.2 %)	275 (75.5 %)	470 (73.4 %)	0.46
Cause of ARDS				
Pulmonary infection[a]	662 (65.9 %)	281 (77.2 %)	381 (59.5 %)	<0.0001
Secondary ARDS[a]	225 (22.4 %)	55 (15.1 %)	170 (26.6 %)	<0.0001
Fungal infection[b]	293 (30.7 %)	83 (23.2 %)	210 (35.1 %)	0.0001
Pneumocystis	64 (6.4 %)	30 (8.2 %)	34 (5.3 %)	0.07
No definite diagnosis[c]	41 (5.7 %)	12 (4.5 %)	29 (6.4 %)	0.29
Berlin categories				
Mild (P/F >200)	252 (25.1 %)	103 (28.3 %)	149 (23.3 %)	
Moderate (P/F 100–200)	426 (42.4 %)	158 (43.4 %)	268 (41.8 %)	0.06
Severe (P/F < 100)	326 (32.5 %)	103 (28.3 %)	223 (34.8 %)	
Organ Support				
NIV	387 (38.6 %)	174 (47.8 %)	213 (33.3 %)	<0.0001
NIV failure	276 (27.5 %)	103 (28.3 %)	173 (27.0 %)	0.67
Endotracheal MV	893 (88.9 %)	293 (80.5 %)	600 (93.8 %)	<0.0001
Vasopressors	731 (72.8 %)	241 (66.2 %)	490 (76.6 %)	0.0004
Renal replacement therapy	306 (30.5 %)	99 (27.2 %)	207 (32.3 %)	0.09

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Diagnostic

TABLE 1 DIRECT criteria for identifying the most likely causes of acute respiratory failure in cancer patients [12, 25]

Delay since malignancy onset or HSCT, since symptom onset and since implementation of antibiotics/prophylaxis
Pattern of **i**mmune deficiency
Radiographic appearance
Experience and knowledge of the literature
Clinical picture (including ongoing chemoprophylaxis and effective antibiotic therapy)
Findings by HRC**T**

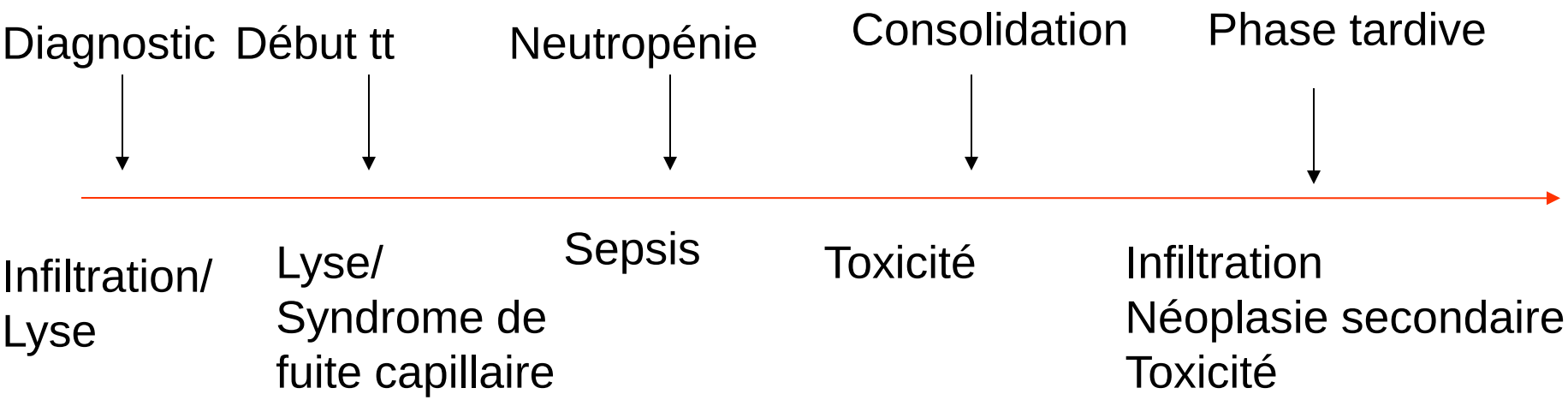
HSCT: haematopoietic stem-cell transplantation; HRCT: high-resolution computed tomography.

Clinical assessment for identifying causes of acute respiratory failure in cancer patients

David Schnell[1,2], Julien Mayaux[1,2], Jérôme Lambert[2,3], Antoine Roux[1,2], Anne-Sophie Moreau[1,2], Lara Zafrani[1,2], Emmanuel Canet[1,2], Virginie Lemiale[1,2], Michael Darmon[1,2] and Élie Azoulay[1,2]

Eur Respir J 2013; 42: 435–443

Causes d'IRA selon le délai dans les hémopathies malignes

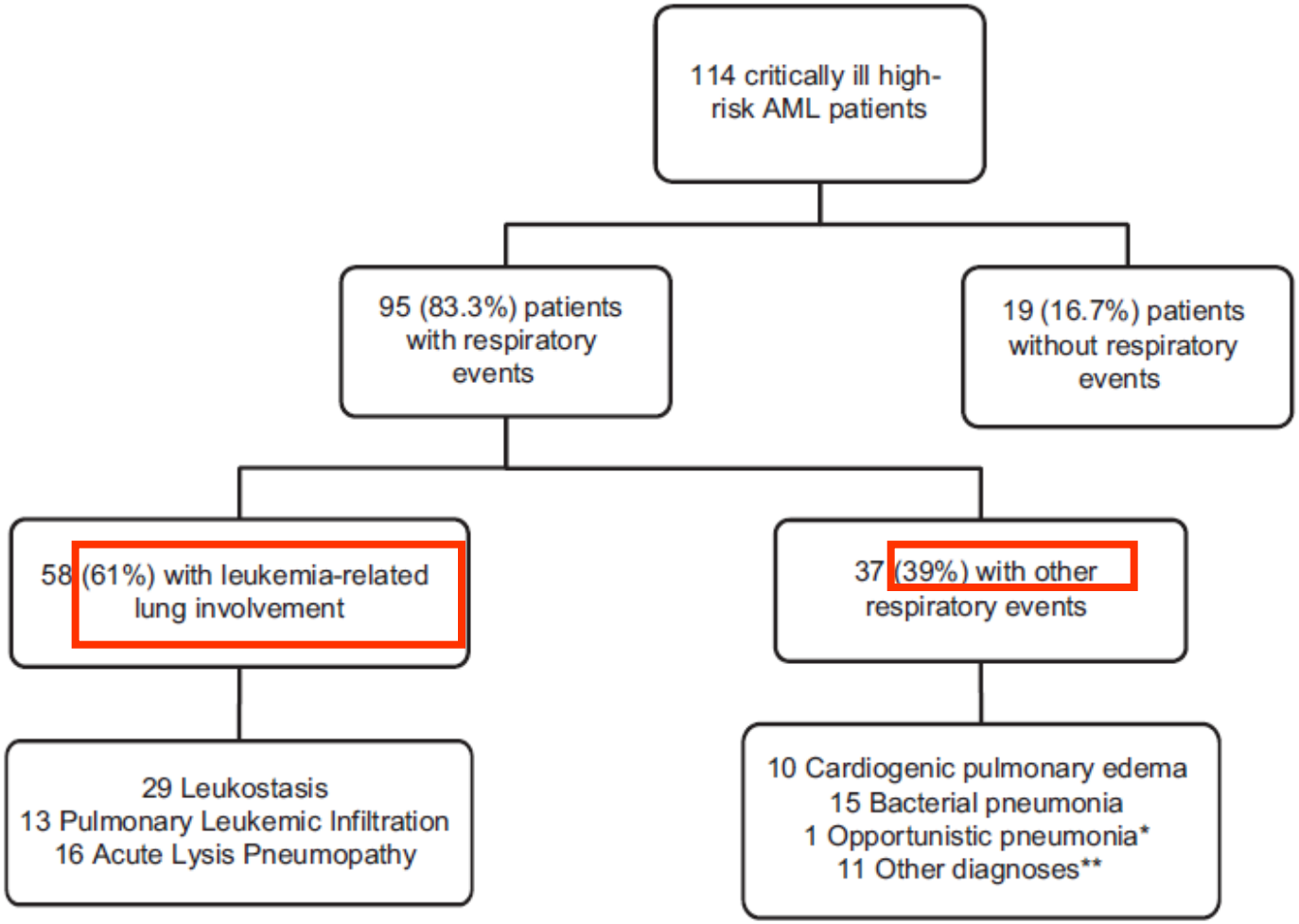


Hémorragie alvéolaire-Surcharge-Infections

Azoulay E, 2008, Rev Mal Respir

Respiratory events at the earliest phase of acute myeloid leukemia

Anne-Sophie Moreau[1], Etienne Lengline[2], Amélie Seguin[3], Virginie Lemiale[1], Emmanuel Canet[1], Emmanuel Raffoux[2], Benoit Schlemmer[1] & Elie Azoulay[1]



Leukemia & Lymphoma, 2014; Early Online: 1–8
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Causes d'IRA non infectieuses post allogreffe selon le délai

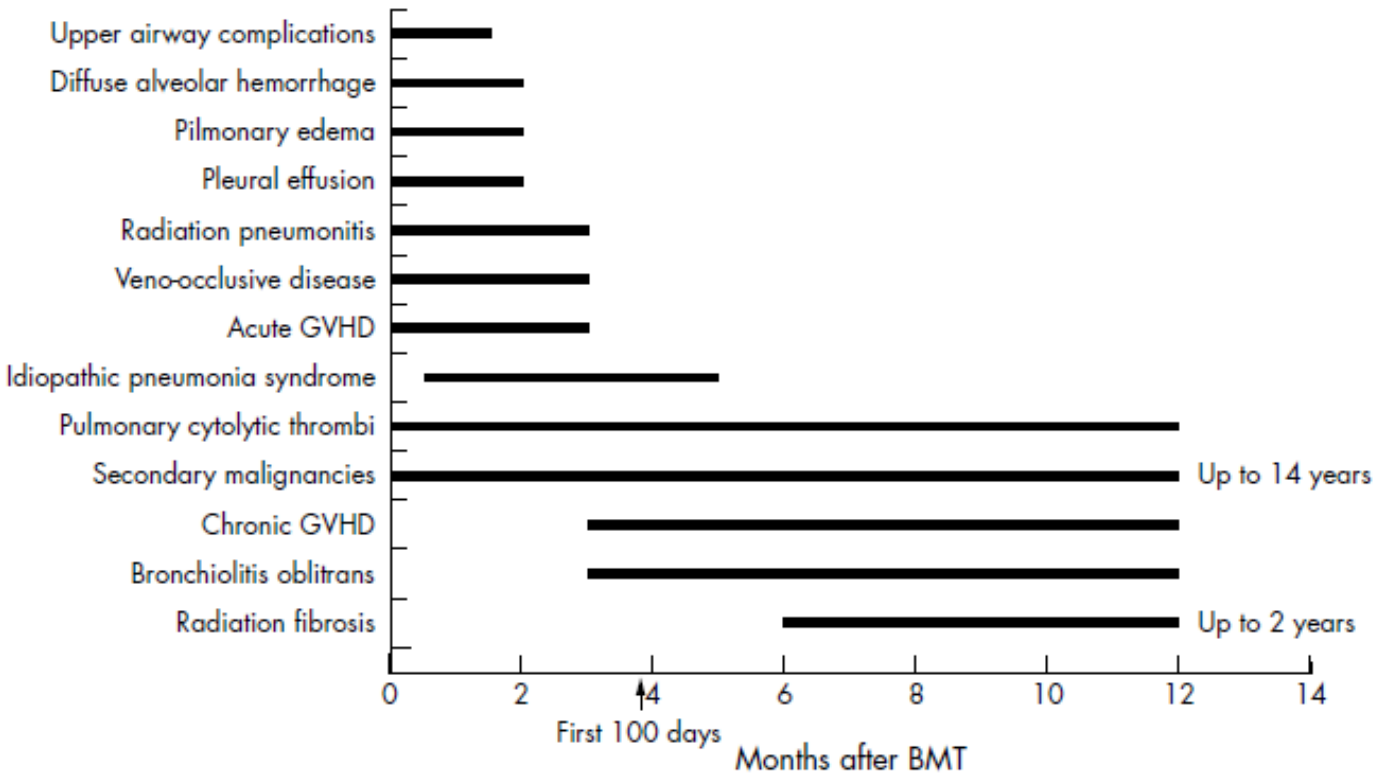
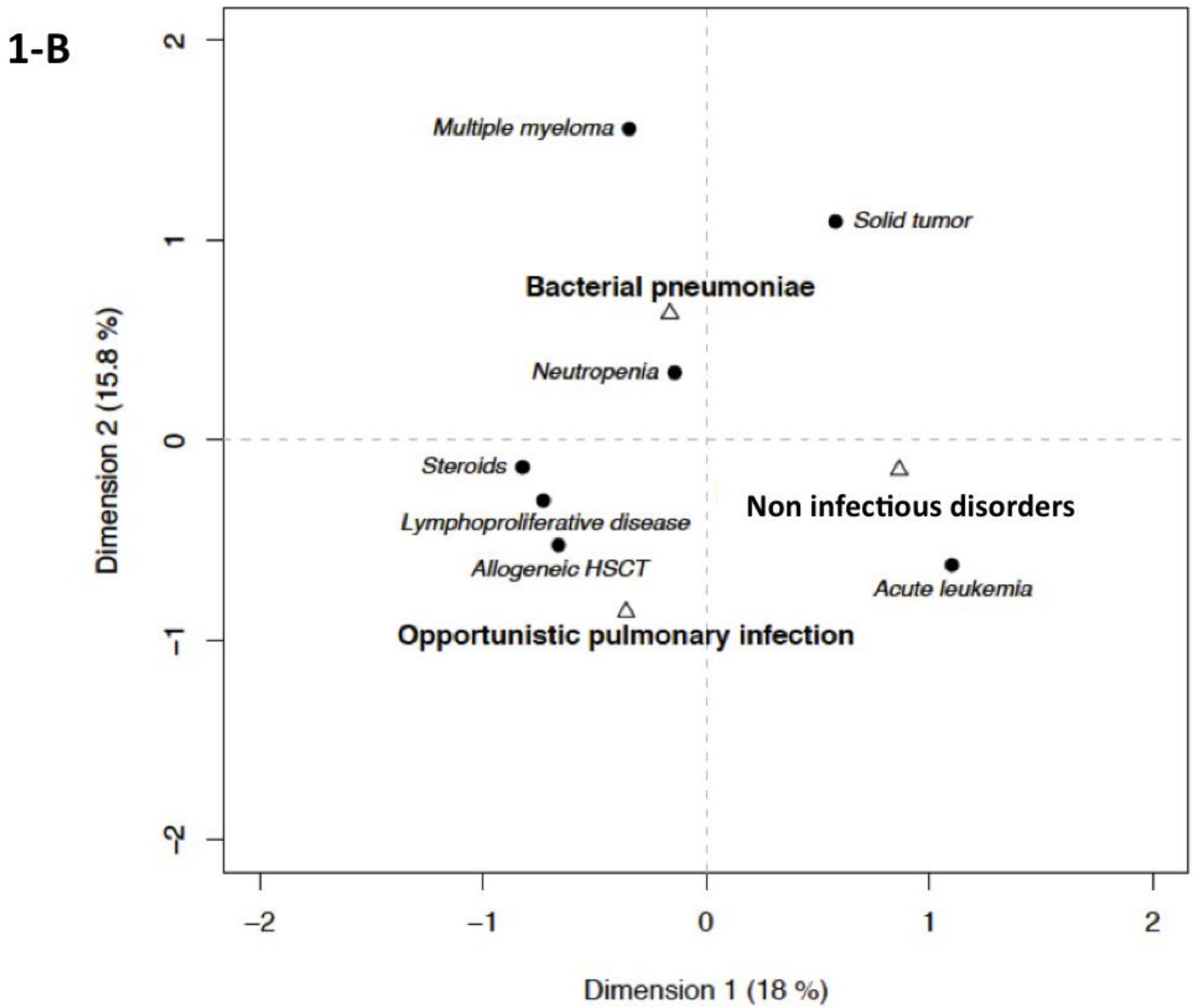


Figure 1 The chronology o
non-infectious pulmonary
complications after BMT.

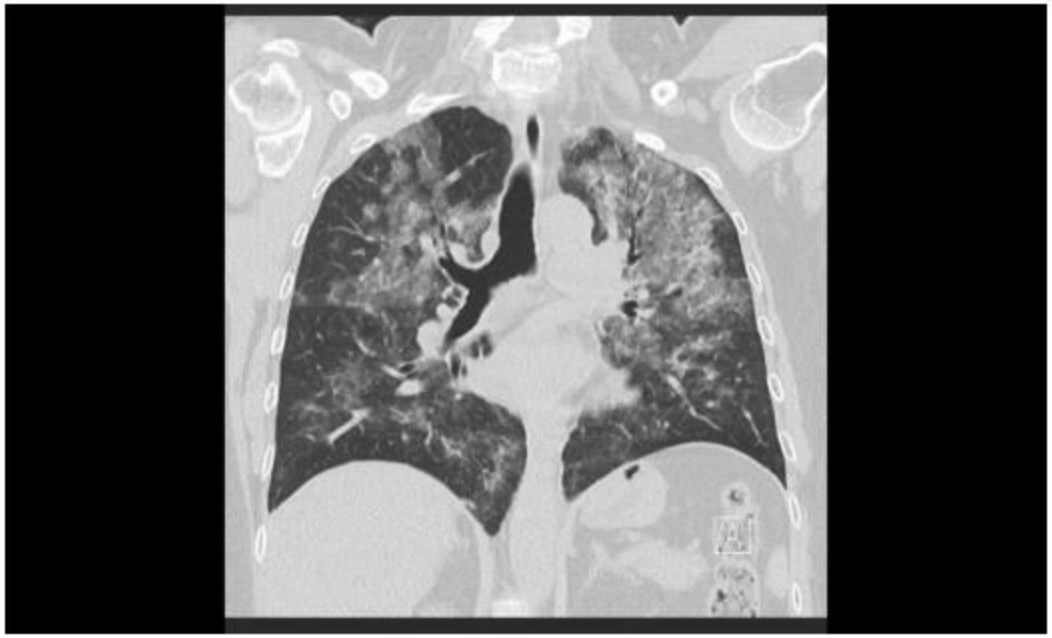
Causes d'IRA selon type d'immunosuppression

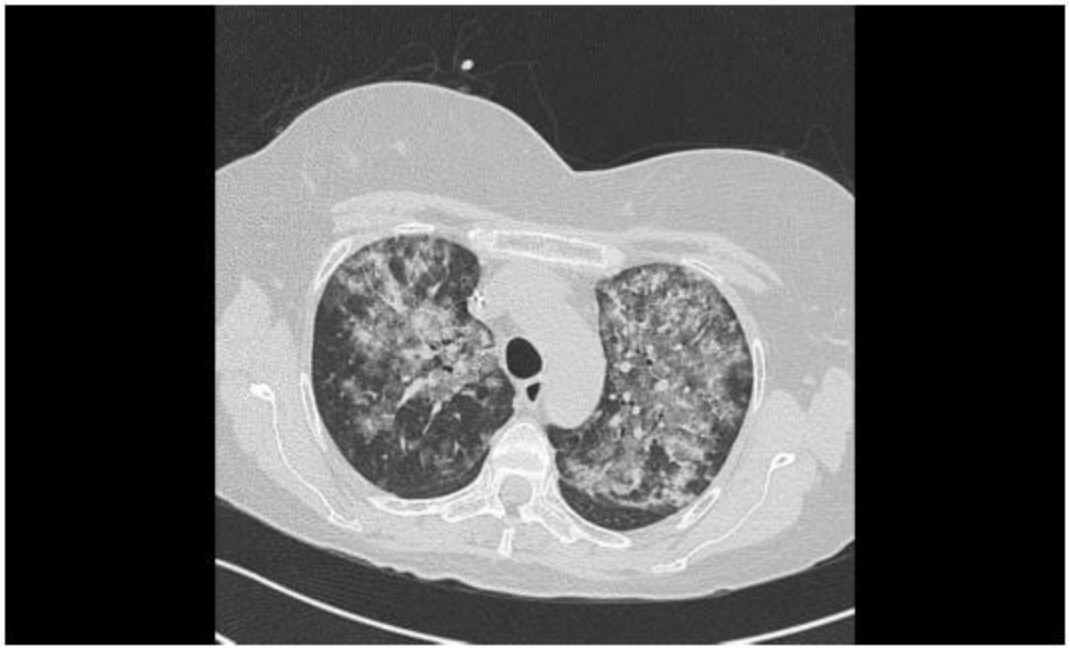


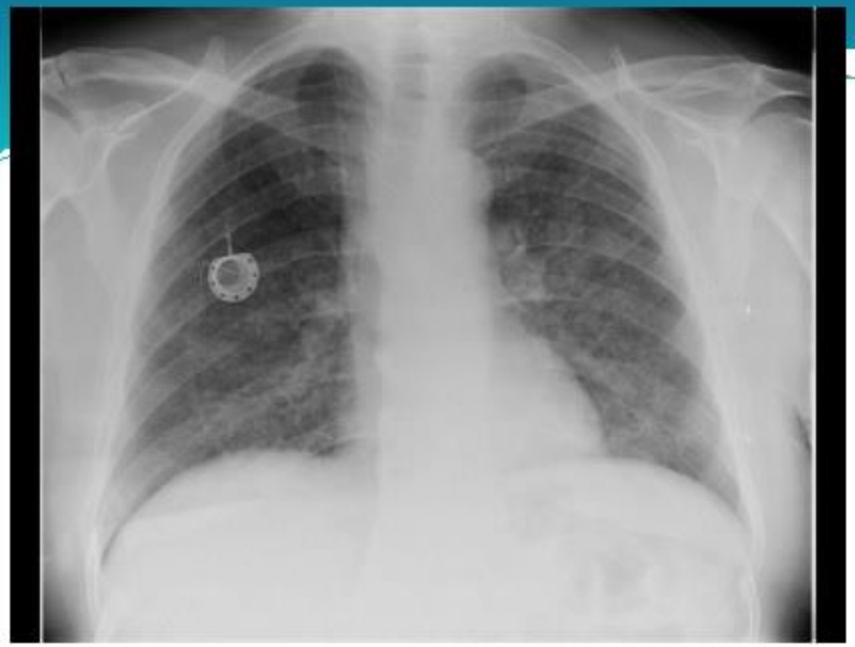
Causes d’IRA selon

- aspect radiologique
- clinique
- aspect CT

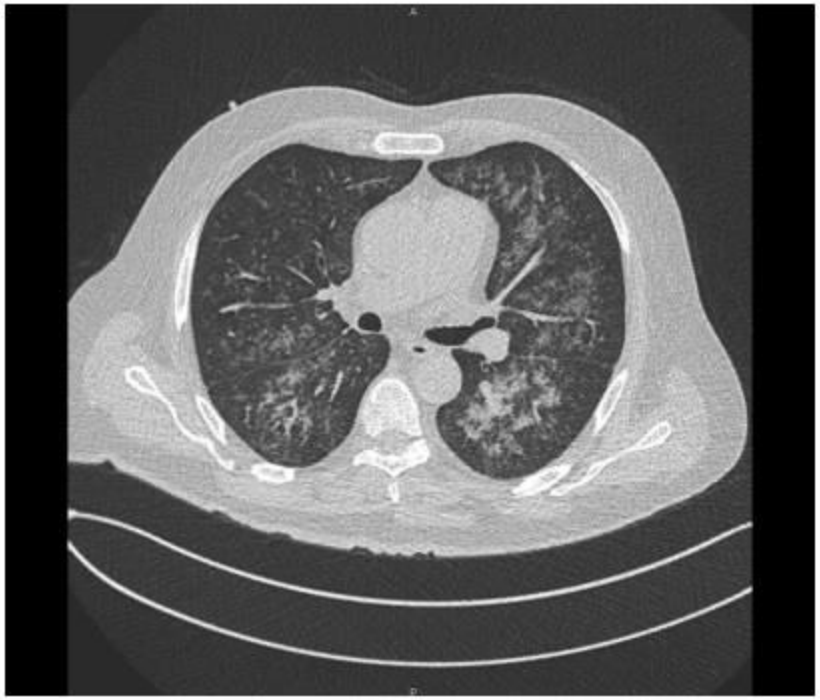
Femme de 53 ans
Néoplasie mammaire, avec des métastases hépatiques, osseuses et une métastase de la tige pituitaire; sous chimiothérapie par taxol+herceptine et corticoïdes ;
gazo(AA):7,52/32/50,
Lymphocytes=700/mm³



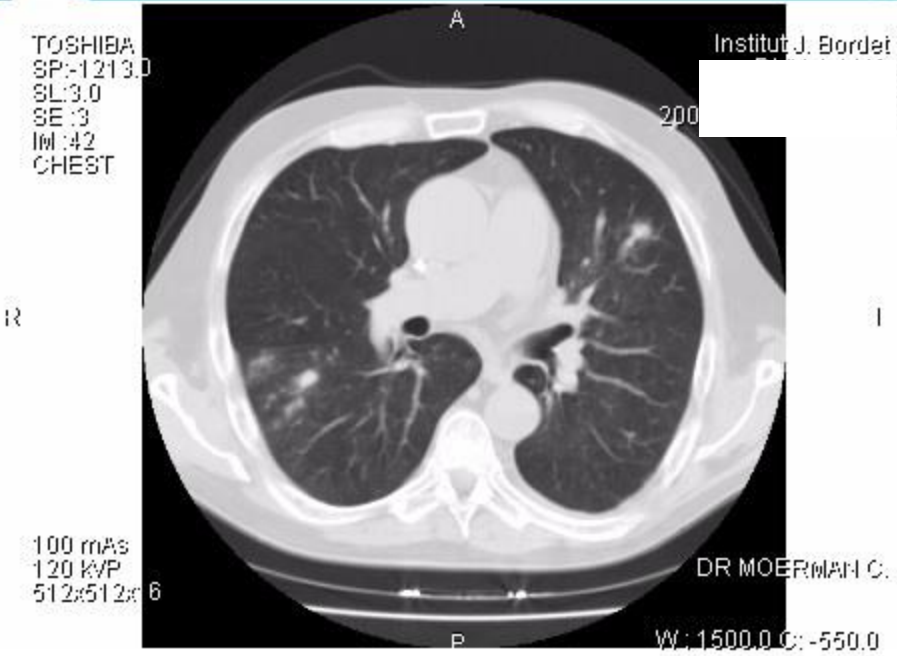


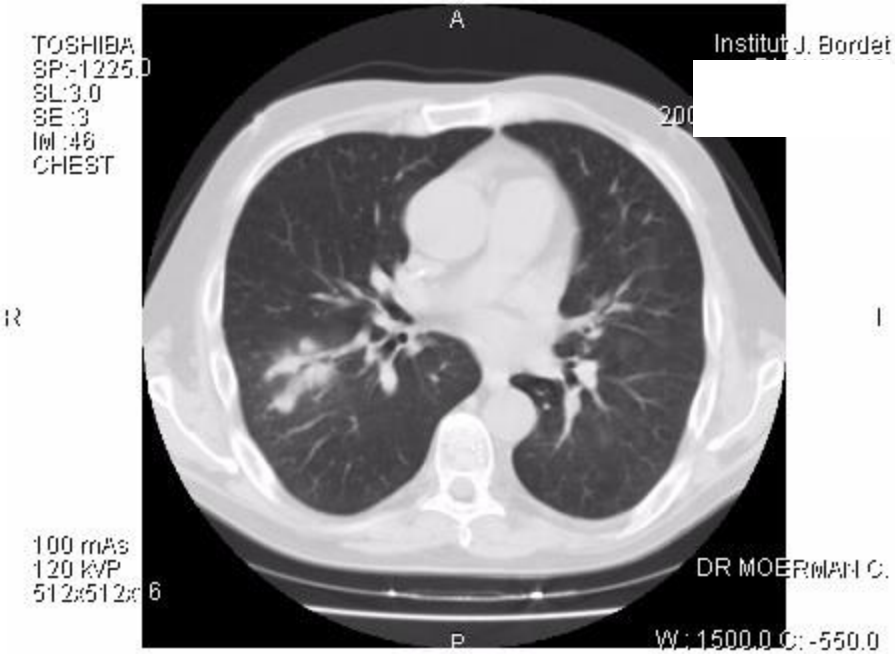


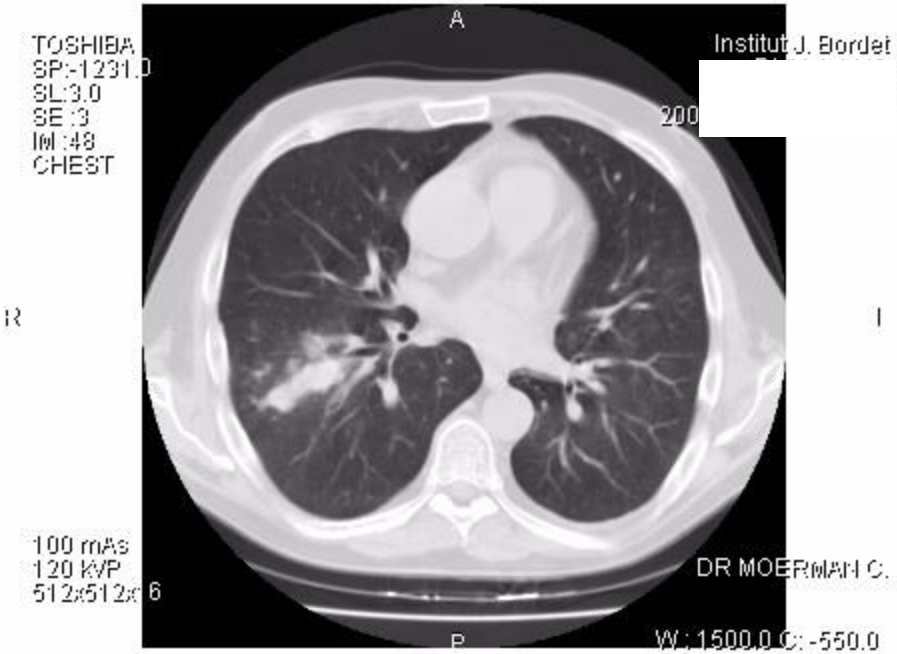
Homme
59 ans allogreffe
LAL
sous Tacrolimus
sous mycophenolate
Lymphopénie
Dyspnée

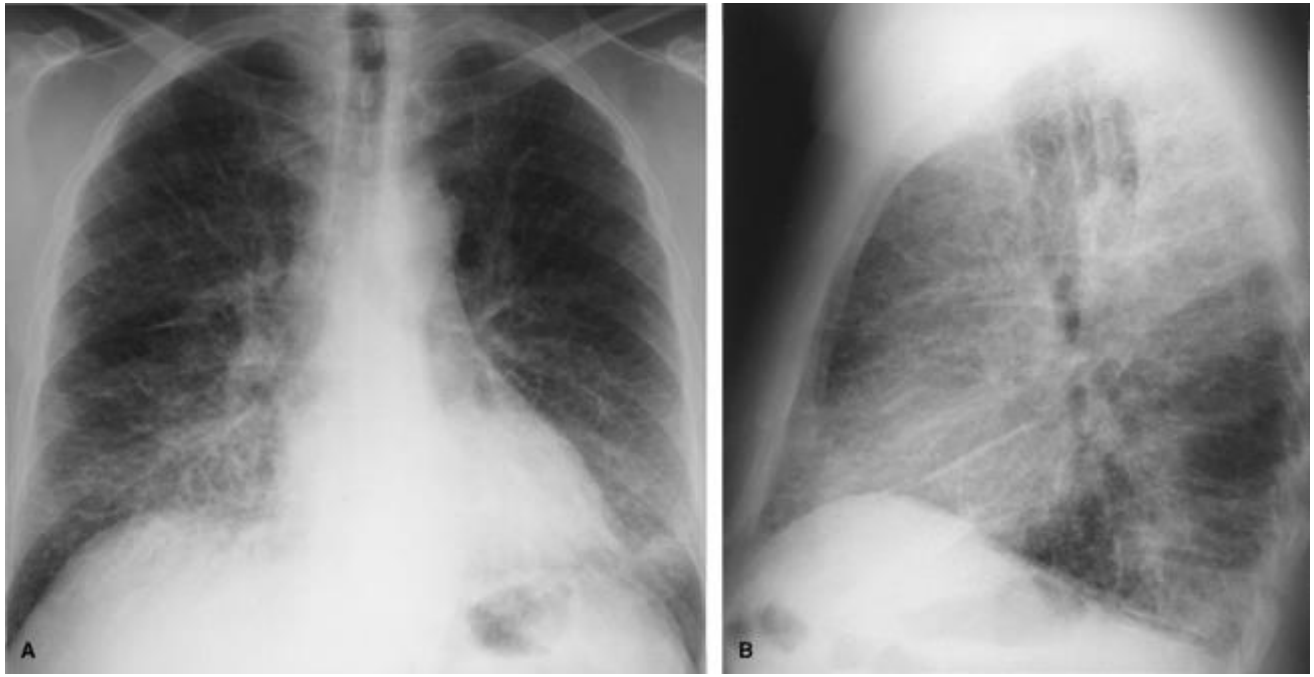


Homme 63 ans
LMC
allogreffe haploidentique
GVH sous corticoides









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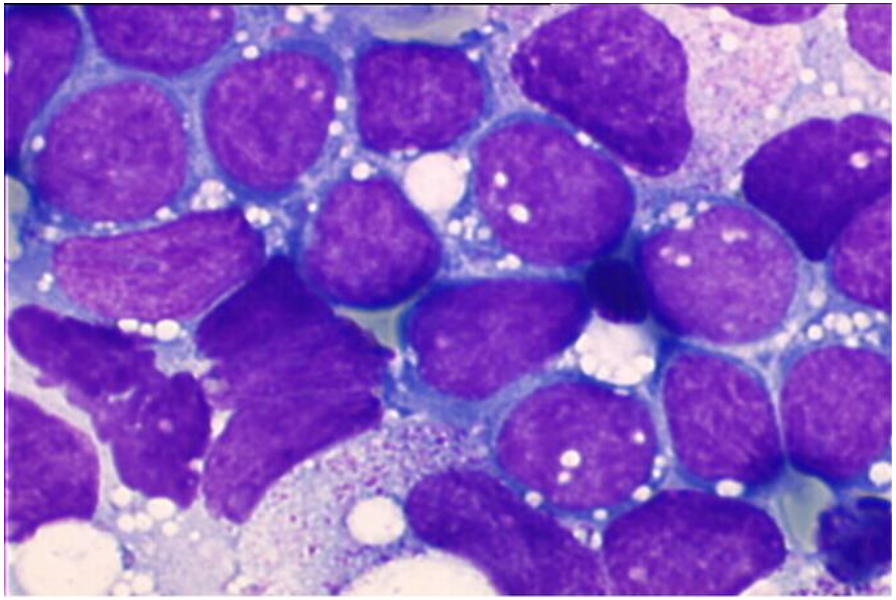

Eur Respir J 2012; 39: 648–653
DOI: 10.1183/09031936.00057711
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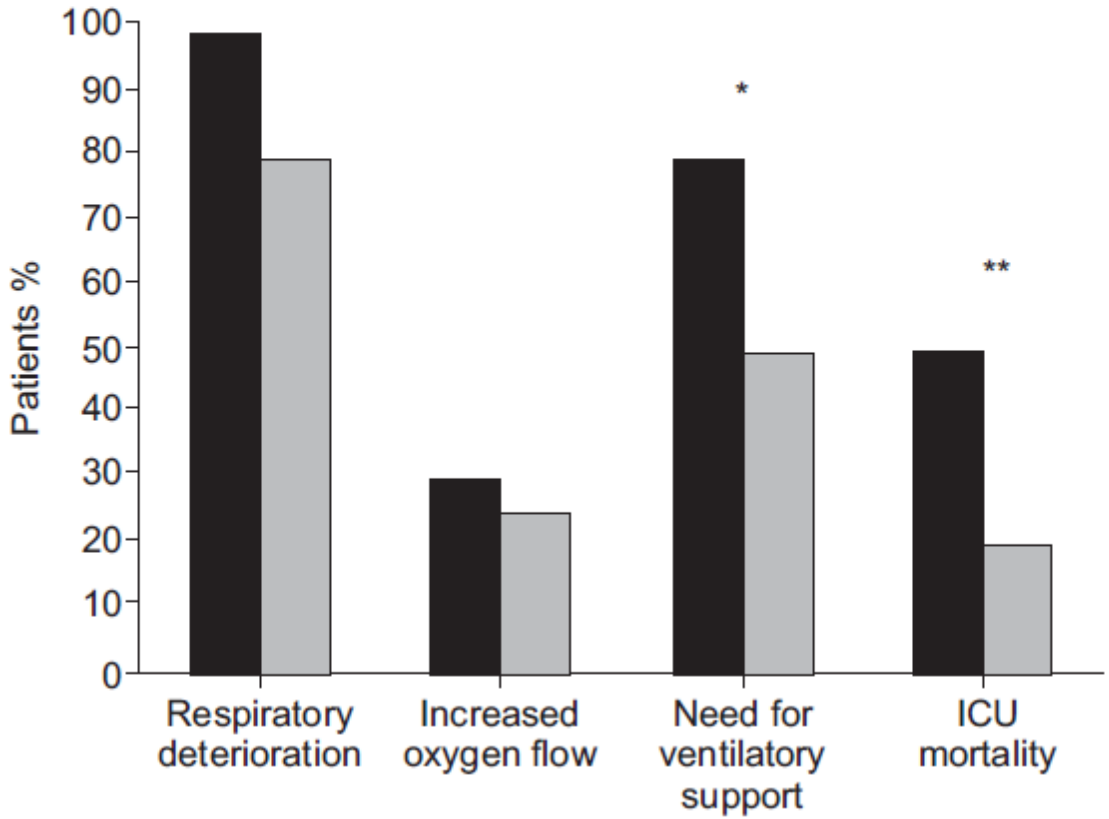
Dexamethasone in patients with acute lung injury from acute monocytic leukaemia

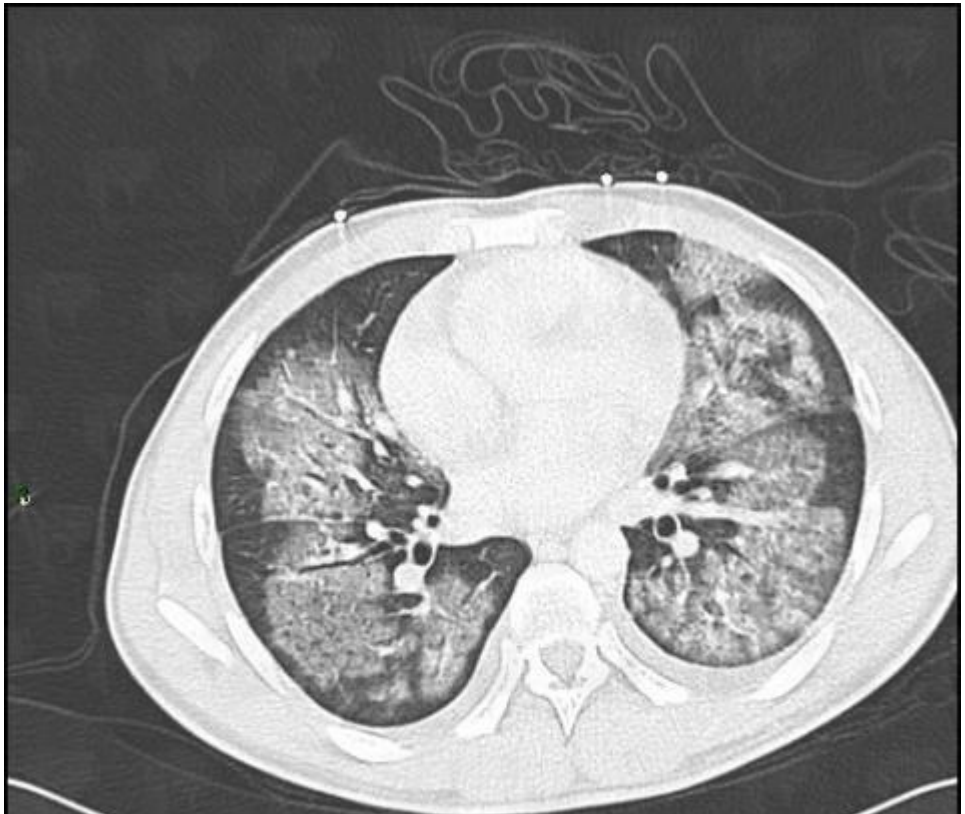
É. Azoulay*, E. Canet*, E. Raffoux#, E. Lengliné#, V. Lemiale*, F. Vincent*, A. de Labarthe#, A. Seguin*, N. Boissel#, H. Dombret# and B. Schlemmer*



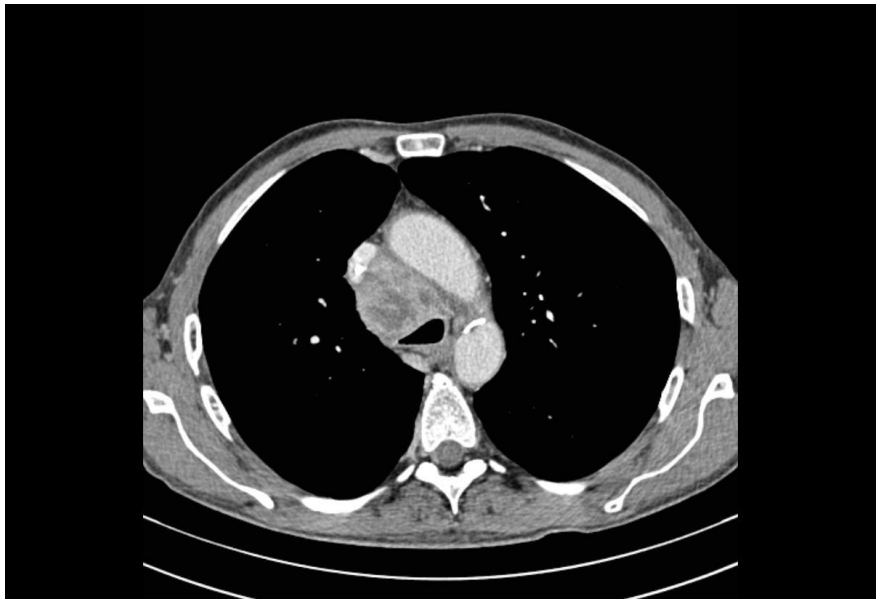
PNEUMOPATHIE DE LYSE TUMORALE

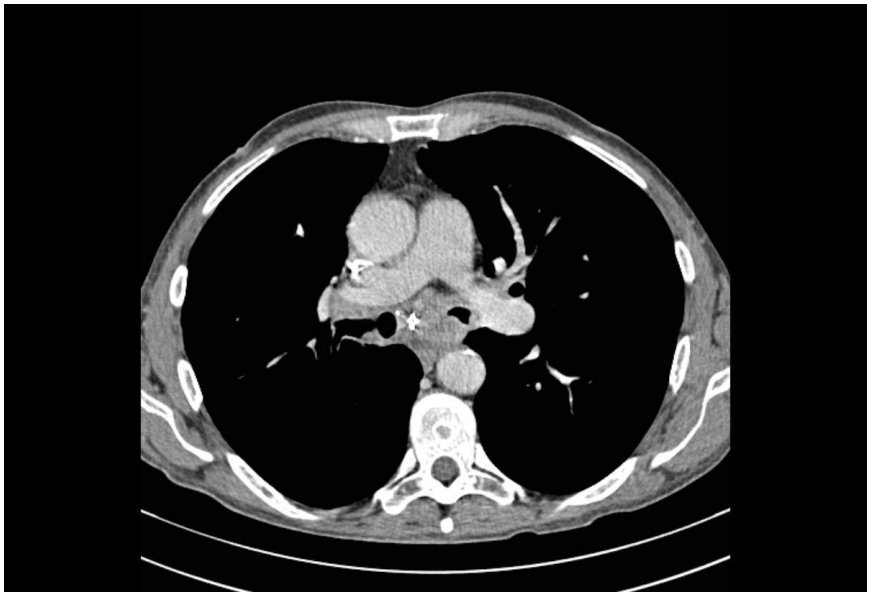
- complication rare
- atteinte alvéolaire diffuse
- Détresse respiratoire survenant avec l’initiation d’une chimiothérapie
- LAM, LAL, leucémie myélomonocytaire avec éosinophilie
- 10 h à 20 jours après le début de la chimiothérapie
- SDRA , hémorragie alvéolaire.
- traitement supportif, avec recours éventuel à la ventilation

- Homme 27 ans
- LAL allogreffe non familliale
- détresse respiratoire
- contexte de pneumopathie, d'hypoplaquettose et de micro-angiopathie sur cysclosporine



Homme 47 ans.
Cancer bronchique.
Dyspnée inspiratoire.

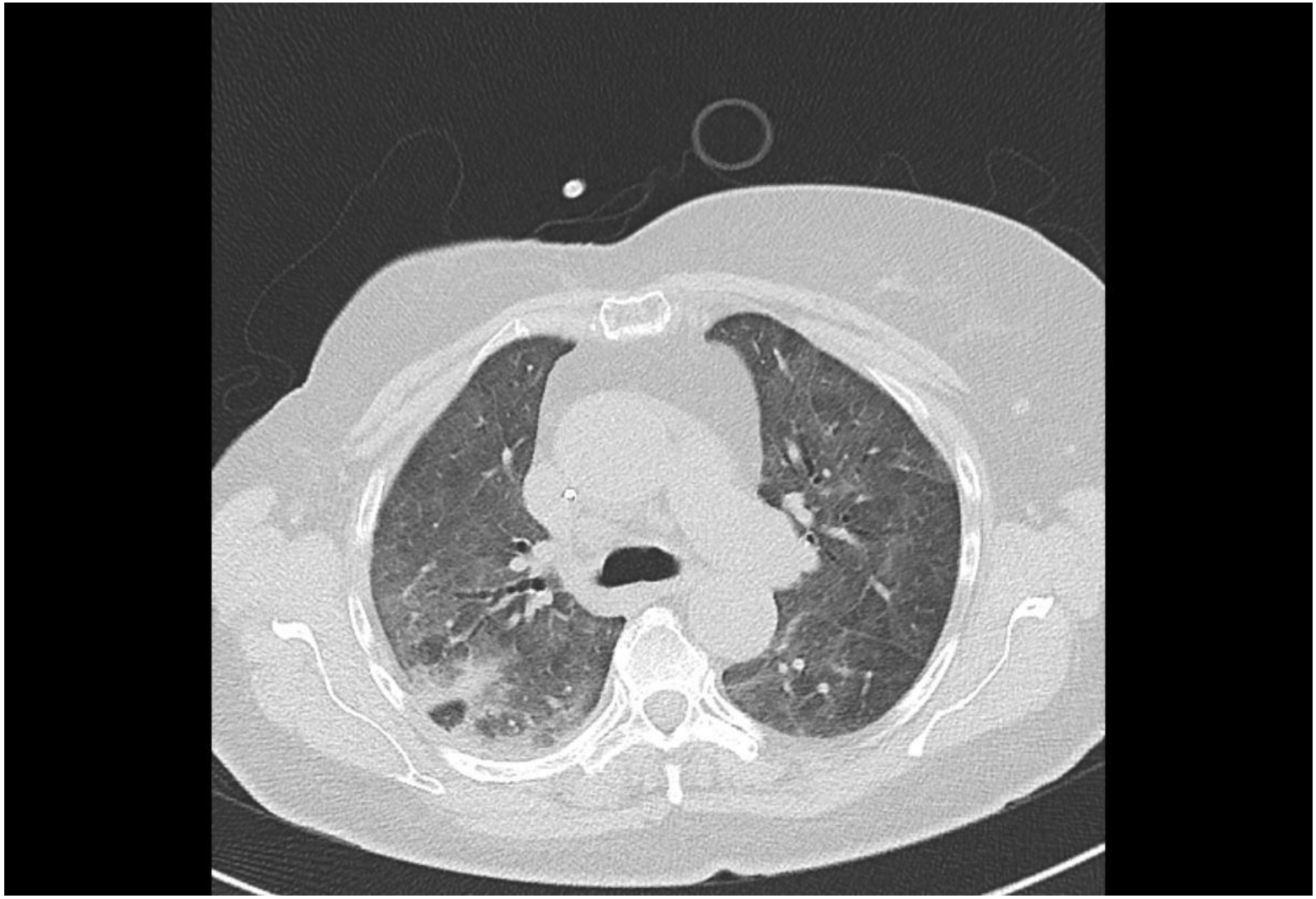




EMBOLIES PULMONAIRES NÉOPLASIQUES / LYMPHANGITE CARCINOMATEUSE

- embolisation de cellules néoplasiques dans les artères pulmonaires distales où elles sont résorbées pour infiltrer la vascularisation lymphatique, donnant le tableau de lymphangite carcinomateuse
- Dyspnée, douleurs thoraciques, toux et hémoptysies, SDRA, décompensation cardiaque droite
- CT thorax: signes de lymphangite, avec épaississement de l’interstice péribronchovasculaire et des septa.
- Chimiothérapie, corticoïdes?

Femme 68 ans.
Néoplasie mammaire M+ au niveau osseux
traitée par Afinitor



Pneumonie interstitielle non spécifique	Gemcitabine, Fludarabine, Paclitaxel, Docetaxel, Irinotecan, Gefitinib, Erlotinib, Imatinib, Rituximab, Thalidomide, Bortezomib, Temsirolimus, Trastuzumab, Oxaliplatine, Temozolomide
Pneumonie d'hypersensibilité	Paclitaxel, Docetaxel, imatinib, méthotrexate
Pneumonie à éosinophiles	Fludarabine, Oxaliplatine
Fibrose interstitielle	Gemcitabine, Fludarabine, Paclitaxel, Gefitinib, oxaliplatine, bléomycine, mitomycine
Hémorragie alvéolaire	Gemcitabine, Gefitinib, Rituximab
Maladie veno-occlusive	Gemcitabine
Bronchiolite oblitérante	Topotecan, trastuzumab, thalidomide
DAD/SDRA	Fludarabine, docetaxel, oxaliplatine, gefitinib, erlotinib, gemcitabine, trastuzumab, Ara C
Epanchements pleuraux	Gemcitabine, fludarabine, docetaxel, imatinib, thalidomide
Bronchospasme	Gemcitabine, paclitaxel, anticorps monoclonaux
Hémoptysies	Bevacizumab

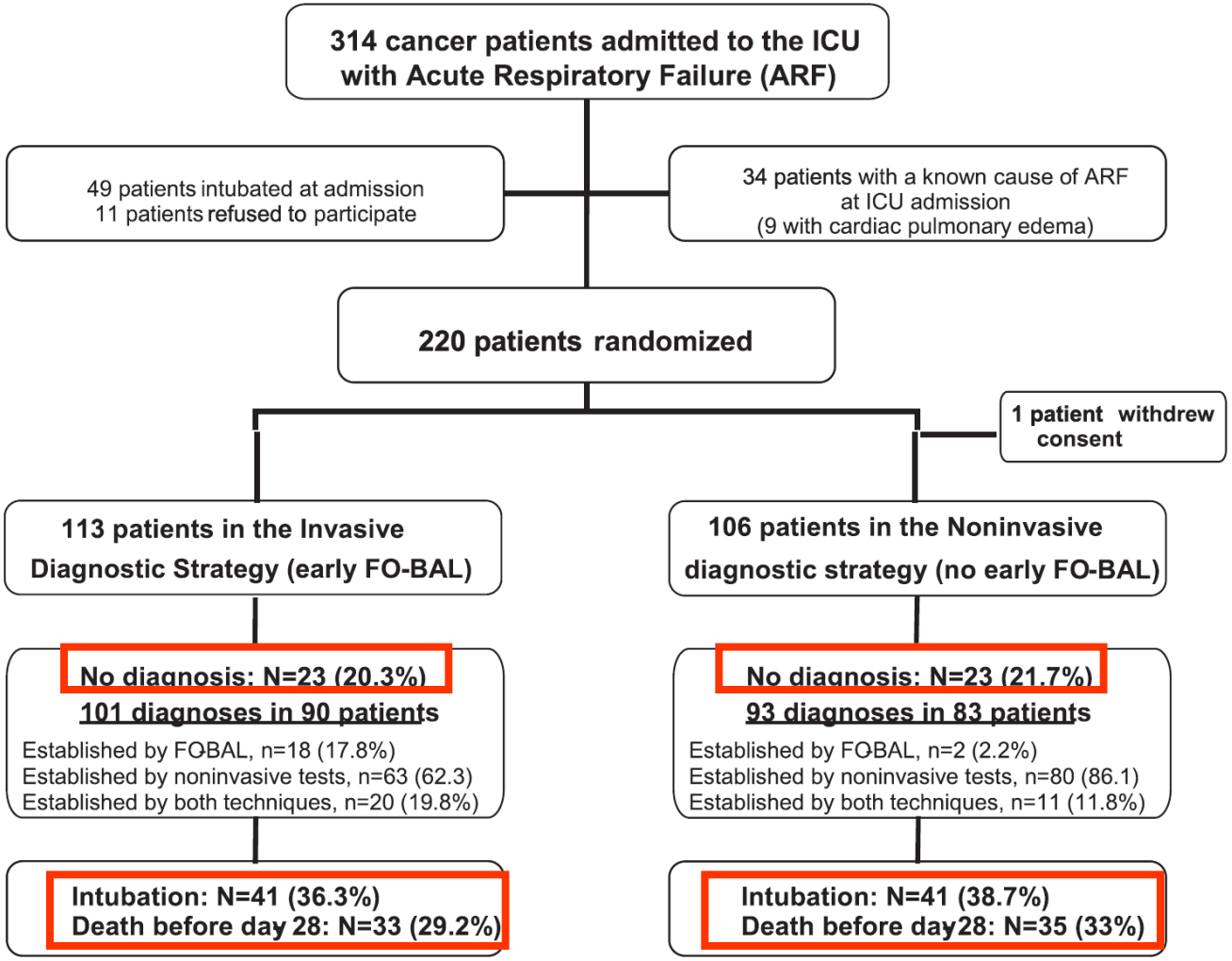
SYNDROME DE FUITE CAPILLAIRE

- atteinte lésionnelle des cellules endothéliales par le traitement anticancéreux : hyperperméabilité capillaire.
- docétaxel, AraC, gemcitabine, conditionnement des greffes de moelle, Il-2,
- Hypotension artérielle, tachycardie, œdèmes, oligurie, insuffisance rénale et détresse respiratoire par œdème pulmonaire.
- oxygénothérapie, support ventilatoire et éventuellement diurétique, corticothérapie (?)
- Si possible, arrêt de l’agent en cause

SYNDROME DE L'ACIDE RÉTINOÏQUE

- Agent différentiant
- LA promyélocytaire.
- les cellules leucémiques se différencient, en se divisant, en cellules hématologiques matures.
- 6-27% dans les 2-47 jours du début du TT
- hyperleucocytose, parfois > 50 000/mm^3 avec leucostase pulmonaire et défaillance respiratoire, voire SDRA (hémorragie alvéolaire cf coagulopathie)
- support ventilatoire et corticothérapie avec des doses de l'ordre de 2x10 mg de dexa/j
- Mortalité: 3-6% si tt instauré

Quel bilan?



Diagnostic Strategy for Hematology and Oncology Patients with Acute Respiratory Failure

Randomized Controlled Trial

Élie Azoulay[1], Djamel Mokart[2], Jérôme Lambert[3], Virginie Lemiale[4], Antoine Rabbat[5], Achille Kouatchet[6], François Vincent[7], Didier Gruson[8], Fabrice Bruneel[9], Géraldine Epinette-Branche[1], Ariane Lafabrie[1], Rebecca Hamidfar-Roy[10], Christophe Cracco[11], Benoit Renard[12], Jean-Marie Tonnelier[13], François Blot[14], Sylvie Chevret[3], and Benoit Schlemmer[1]

Am J Respir Crit Care Med. 2010 Oct 15;182(8):1038-46

Pronostic

The Prognosis of Acute Respiratory Failure in Critically Ill Cancer Patients

Élie Azoulay, MD, PhD, Guillaume Thiéry, MD, Sylvie Chevret, MD, PhD,

Number of cancer patients admitted between November 1997 and November 2002	ICU admission rate between November 1997 and November 2002	Hospital mortality after Acute Respiratory Failure
100 chronic myelogenous leukemia	12 (12%)	3 (25%)
520 acute leukemia	62 (11.9%)	30 (48.3%)
262 multiple myeloma	27 (10.3%)	15 (55.5%)
600 non-Hodgkin lymphoma	48 (8%)	21 (43.7%)
150 chronic lymphocytic leukemia	11 (7.3%)	6 (54.5%)
200 Hodgkin lymphoma	12 (6%)	5 (41.6%)
200 miscellaneous*	12 (6%)	6 (50%)
500 lung cancer	10 (2%)	6 (60)
1250 breast cancer	9 (0.7 %)	5 (55.5)
TOTAL 3782 cancer patients	TOTAL 203 (5.4%) ICU admissions	TOTAL 97 (47.7)

FIGURE 1. Flow chart of hematology and oncology patients admitted to the Saint-Louis Hospital between 1997 and 2002. *Miscellaneous malignancies included 7 patients with myelodysplastic syndrome, 2 patients with Waldenström disease, 2 patients with polycythemia vera, and 1 patient with Fanconi syndrome.

By multivariable analysis, factors associated with increased mortality were

- invasive aspergillosis (OR, 2.13; 95% CI, 1.05–14.74),
- no definite diagnosis (OR, 3.85; 95% CI, 1.26–11.70)
- vasopressors (OR, 3.19; 95% CI, 1.28 –7.95)
- first-line conventional MV (OR, 8.75; 95% CI, 2.35 –35.24)
- MV after NIV failure (OR, 17.46; 95% CI, 5.04–60.52)
- late NIV failure (OR, 10.64; 95% CI, 1.05–107.83)

Pronostic dans l'ARDS

Hospital mortality 64 %

59, 63 and 68.5 %, respectively (p = 0.06).

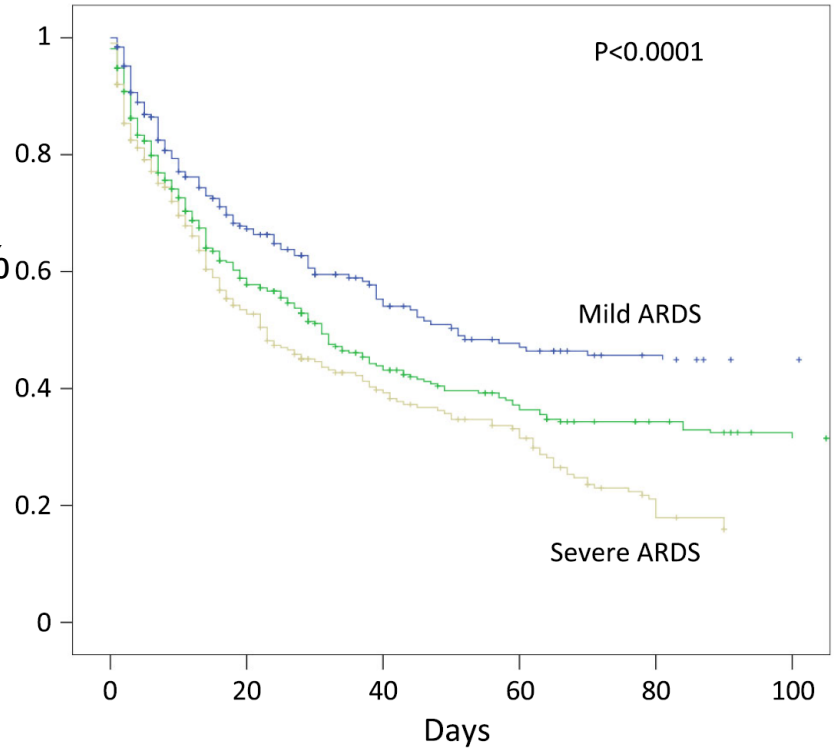


Fig. 3 Cumulative survival according to ARDS severity category in the Berlin definition. The *blue line* indicates mild ARDS, *red line* moderate ARDS and *gray line* severe ARDS. The three groups were compared using the log-rank test ($p < 0.0001$)

Intensive Care Med (2014) 40:1106–1114

Table 3 Factors independently associated with hospital mortality

	OR	95 % CI	*p* value
Solid tumor	0.51	(0.34–0.77)	0.002
Need for emergency surgery	0.61	(0.35–1.05)	0.07
Allogeneic BMT/HSCT	1.71	(1.07–2.71)	0.04
mSOFA (per point)	1.11	(1.06–1.16)	<0.001
Cause of respiratory involvement			
No definite diagnosis	1	(Reference)	–
Primary ARDS	0.41	(0.20–0.88)	0.02
Secondary ARDS	0.90	(0.41–2.01)	0.80
Invasive fungal infection	1.72	(1.25–2.37)	0.001
Ventilation			
NIV	1	(Reference)	–
NIV failure	2.93	(1.80–4.79)	<0.001
Endotracheal MV	3.24	(2.02–5.24)	<0.001
ARDS severity			
Mild	1	(Reference)	–
Moderate	1.25	(0.88–1.78)	0.22
Severe	1.61	(1.10–2.36)	0.01

Support ventilatoire

- VMI
- VNI
- ECMO

Ventilation mécanique invasive

Outcome in Noninvasively and Invasively Ventilated Hematologic Patients With Acute Respiratory Failure

Pieter O. Depuydt, Dominique D. Benoit, Koenraad H. Vandewoude, Johan M. Decruyenaere and Francis A. Colardyn

Table 1—*Patient Characteristics at ICU Admission**

Characteristics	Values
Demographics	
Age, yr	60 (42–69)
Sex, male	100 (60.2)
Severity of illness	
SAPS II	58.9 ± 18.4
Underlying malignancy	
AML	44 (26.5)
ALL	21 (12.7)
High-grade NHL	28 (16.9)
Chronic lymphocytic leukemia/low-grade NHL	24 (14.5)
MM	17 (10.2)
Others†	32 (19.2)
Disease status	
Relapse/active disease	50 (30.1)
Therapy-related characteristics	
Leukopenia at admission	45 (27.1)
Recent IV chemotherapy (< 3 wk)	71 (43)
Allogeneic BMT/PBSCT	28 (16.9)
< 30 d	13
30–90 d	2
> 90 d	13
ICU admission reason	
Respiratory failure	90 (54.4)
Severe sepsis	25 (15.1)
Neurologic impairment	24 (14.5.1)
Cardiac failure	8 (4.8)
CPR	8 (4.8)
Metabolic	7 (4)
GI bleeding	4 (2.4)

Hospital mortality 71%.

Chest 2004;126;1299-1306

Table 3—*Results From Stepwise Logistic Regression Procedure**

Variable	Parameter Estimate	OR	95% CI	p Value
Female sex	−1.01	0.36	0.16–0.82	0.014
Intubation < 24 h	−1.25	0.29	0.11–0.78	0.015
Bacteremia < 48 h	−1.52	0.22	0.08–0.61	0.003
AML	1.004	2.73	1.05–7.11	0.04
SAPS II	0.08	1.07	1.04–1.11	< 0.001

Outcome and predictors of mortality in patients requiring invasive mechanical ventilation due to acute respiratory failure while undergoing ambulatory chemotherapy for solid cancers

So Young Park · So Yeon Lim · Sang-Won Um · Won-Jung Koh · Man Pyo Chung · Hojoong Kim · O Jung Kwon · Hye Kyeong Park · Seok Jin Kim · Young Hyuck Im · Myung-Ju Ahn · Gee Young Suh

Table 1 Demographic and clinical characteristics of patients

Variables	Subjects (n=51)
Age, year	65 (25–87)
Sex(male)	38 (74.5 %)
Smoking[a]	
Smoker	28 (54.9 %)
Non-smoker	20 (39.2 %)
Comorbid conditions	
DM	4 (7.8 %)
HTN	7 (13.7 %)
Pulmonary TB	1 (2.0 %)
COPD	2 (3.9 %)
Primary site of solid cancer	
Lung	42 (82.3 %)
Colon	2 (3.9 %)
Stomach	5 (9.8 %)
Pancreas	1 (2 %)
Breast	1 (2 %)
Time from chemotherapy to admission in ICU (days)	7 (3–22)
ECOG PS	
0	2 (3.9 %)
1	8 (15.7 %)
2	38 (74.5 %)
3	3 (5.9 %)
SOFA	8 (5–14)
APACHE II	17 (7–32)
Treatment in ICU	
Vasopressor therapy	25 (49.0 %)
Renal replacement therapy	12 (23.5 %)
Tracheostomy	8 (15.7 %)
Duration of mechanical ventilation	4.5 (1–80)
Median ICU stay	7 (1–80)

ICU mortality 68%

Support Care Cancer (2013) 21:1647–1653

variables	Survivors	Non survivors	Unadjusted OR (CI) *P* value	Adjusted OR (CI)* *P* value
Age	62.4 (37–75)	59.5 (25–87)	1.051 (0.99–1.115) *P*=0.101	NA
Sex (male)	13 (34.2 %)	25 (65.8 %)	1.733 (0.405–7.418) *P*=0.458	NA
N	15 (7–31)	17.5 (12–32)	1.106 (0.996–1.228) *P*=0.06	NA
Smoking	9 (32 %)	19 (68 %)	1.000 (0.998–1.003) *P*= 0.942	0.897 (0.997–1.003) *P*=0.897
Primary site			0.897 (0.194–4.151) *P*=0.889	0.616 (0.116–3.268) *P*=0.570
Lung	13 (31 %)	29 (69 %)		
Others	3 (33 %)	6 (67 %)		
Time from chemotherapy (days)	7 (3–22)	10 (5–28)	1.028 (0.989–1.069) *P*=0.165	1.038 (0.995–1.082) *P*=0.084
Use of inotropics	10 (62.5 %)	15 (43 %)	2.22 (0.66–7.278) *P*=0.197	2.45 (0.072–8.943) *P*=0.174
Poor ECOG PS*	9 (22 %)	32 (78 %)	8.296 (1.776–38.75) *P*=0.007	6.554 (1.283–33.48) *P*=0.024
SOFA	7 (3–14)	10 (5–15)	1.179 (0.975–1.426) *P*=0.089	1.149 (0.939–1.407) *P*=0.177

100% mortalité si VMI « tardive »

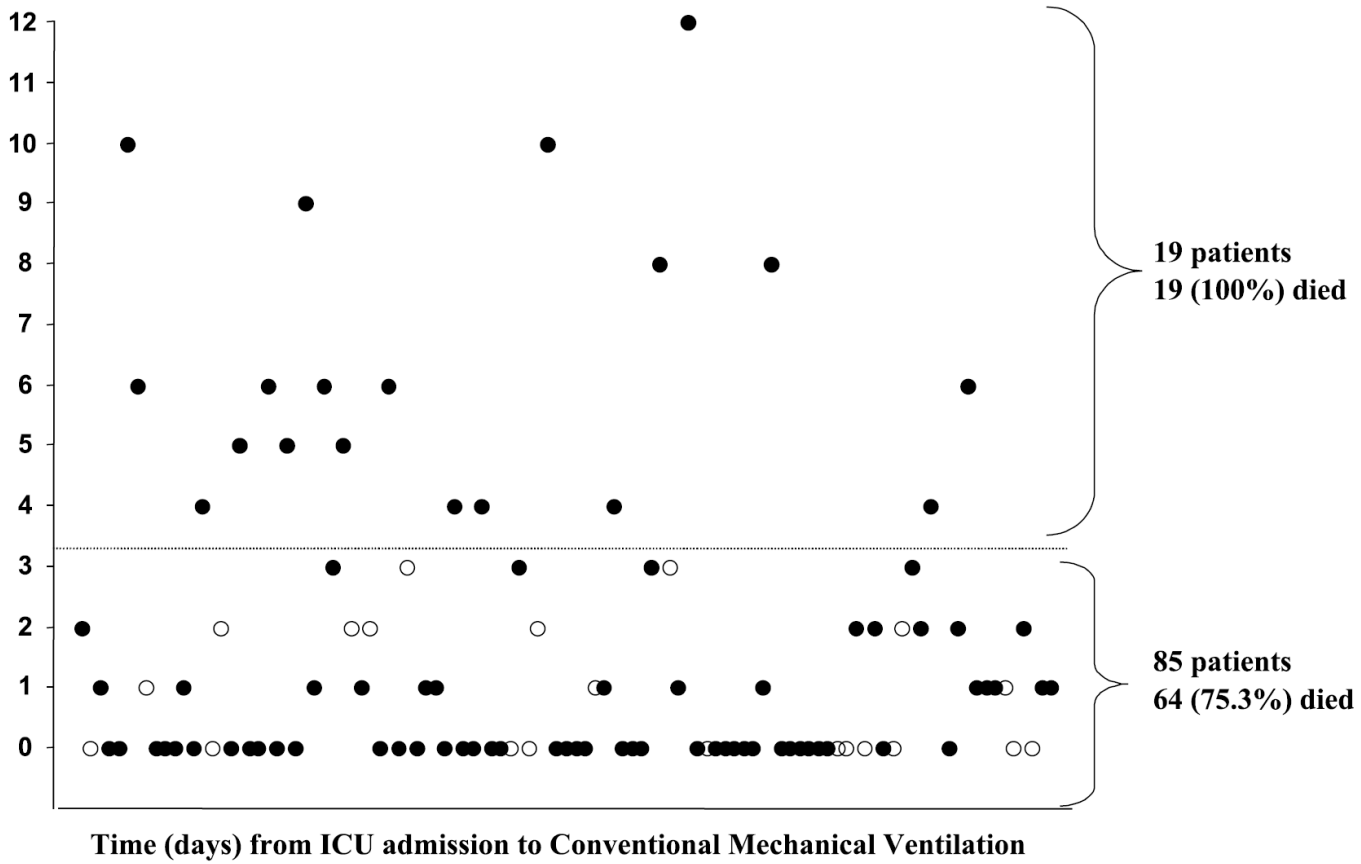


FIGURE 2. Time from ICU admission to mechanical ventilation (MV) in patients without cardiogenic pulmonary edema. Closed circles indicate patients who died; open circles indicate patients who survived. Of the 19 patients with a time to conventional MV longer than 3 days, 14 were on noninvasive MV. Ten patients with acute respiratory failure from cardiac pulmonary edema are not

Ventilation non invasive

Tableau 2 – Niveaux de reccommandation pour les indications de la VNI	
Intérêt certain Il faut faire (G1+)	Décompensation de BPCO OAP cardiogénique
Intérêt non établi de façon certaine Il faut probablement faire (G2+)	IRA hypoxémique de l'immunodéprimé Post-opératoire de chirurgie thoracique et abdominale Stratégie de sevrage de la ventilation invasive chez les BPCO Prévention d'une IRA post extubation Traumatisme thoracique fermé isolé Décompensation de maladies neuromusculaires chroniques et autres IRC restrictives Mucoviscidose décompensée *Forme apnéisante de la bronchiolite aiguë* *Laryngo-trachéomalacie*
Aucun avantage démontré Il ne faut probablement pas faire (G2-)	Pneumopathie hypoxémiante SDRA Traitement de l' IRA post-extubation Maladies neuromusculaires aiguës réversibles
Situations sans cotation possible	Asthme Aigu Grave Syndrome d'obésité-hypoventilation *Bronchiolite aiguë du nourrisson (hors forme apnéisante)*

la SFAR, la SPLF et la SRLF

Ventilation Non Invasive

au cours de l'insuffisance respiratoire aiguë (nouveau-né exclu)

Improved survival in cancer patients requiring mechanical ventilatory support: Impact of noninvasive mechanical ventilatory support

Elie Azoulay, MD; Corinne Alberti, MD; Caroline Bornstain, MD; Ghislaine Leleu, MD; Delphine Moreau, MD; Christian Recher, MD; Sylvie Chevret, MD, PhD; Jean-Roger Le Gall, MD; Laurent Brochard, MD, PhD; Benoît Schlemmer, MD

Table 3. Multivariable analysis: Additive predictors of 30-day mortality

Variables	Odds ratio	95% CI	*p* Value
Noninvasive mechanical ventilation	0.343	0.16–0.73	<.0001
ICU admission between 1996 and 1998	0.24	0.12–0.50	<.0001
SAPS II score (per point)	1.04	1.02–1.06	<.0001

(Crit Care Med 2001; 29:519–525)

Invasive mechanical ventilation in cancer patients. Prior non invasive ventilation is a poor prognostic factor

A.P. Meert, T. Berghmans, E. Markiewicz, M. Hardy, N. Naver, M. Paesmans, J.P. Sculier

Table 1. Patient characteristics on admission

Characteristics	*Whole group*	*NIV followed by IMV*	*IMV alone*	*p-value*
Number of patients	164	41	123	
Median age, years (range)	57 (19-81)	49 (23-78)	59 (20-81)	0.008
Gender				0.86
Male, n	95	23	72	
Female, n	69	18	51	
Median SAPS II score (range)	53 (23-94)	56 (23-83)	47 (30-94)	0.002
Type of malignancy, n (%)				<0.001
Solid tumor	106 (64.6)	16 (39.0)	90 (73.2)	
Haematological malignancy	58 (35.4)	25 (61.0)	33 (26.8)	
Bone marrow /Peripheral blood stem cell transplantation, n (%)	37 (63.8)	19 (76.0)	18 (54.5)	<0.001
Cancer phase* (1,2 vs. 3,4), n (%)				0.006
Phase 1	5 (3.0)	1 (2.4)	4 (3.2)	
Phase 2	60 (36.6)	23 (56.1)	37 (30.1)	
Phase 3	89 (54.3)	17 (41.5)	72 (58.5)	
Phase 4	10 (6.1)	0 (0.0)	10 (8.1)	
Leukopenia at admission, n (%)	40 (24.4)	13 (31.7)	27 (21.9)	0.22
Median PaO_2/FiO_2 ratio (range)	215 (46-590)	183 (52-407)	230 (46-590)	0.02

Table 5. Multivariate analysis of variables predicting hospital discharge

Variable		*OR (95% CI)*	*p-value*
NIV before IMV vs. immediate IMV	Yes vs. no	0.30 (0.09-0.95)	0.04
Leukopenia	Yes vs. no	0.21 (0.06-0.77)	0.02
Serum bilirubin	≥ 1.1 vs. <1.1 mg/dl	0.38 (0.16-0.94)	0.04

ECMO

Extracorporeal membrane oxygenation in adult patients with hematologic malignancies and severe acute respiratory failure

Philipp Wohlfarth[1], Roman Ullrich[2], Thomas Staudinger[1], Andja Bojic[1], Oliver Robak[1], Alexander Hermann[1], Barbara Lubsczyk[2], Nina Worel[3], Valentin Fuhrmann[4], Maria Schoder[5], Martin Funovics[5], Werner Rabitsch[1], Paul Knoebl[1], Klaus Laczika[1], Gottfried J Locker[1], Wolfgang R Sperr[1], Peter Schellongowski[1*] and Arbeitsgruppe für hämato-onkologische Intensivmedizin der Österreichischen Gesellschaft für Internistische und Allgemeine Intensivmedizin und Notfallmedizin (ÖGIAIN)

Table 1 Individual characteristics and outcomes

Patient number	Malignancy	Therapy status (days since therapy)	Etiology of ARF	SAPS II	LIS	ECMO days	Bleeding	ICU and hospital outcome
1	CNS NHL	Chemotherapy (51)	Pneumonia	45	3.7	9	Minor	Died
2	Hodgkin lymphoma	Allo SCT (111)	Pneumonia	34	3.3	28[b]	Major	Died
3	ALL	Consolidation (13)	Abdominal sepsis	78	2.3	4[c]	-	Alive
4	ALL[a]	Induction on ECMO	TRALI	62	3.3	3	-	Alive
5	Burkitt lymphoma	Induction (16)	Pneumonia	63	3.8	8	-	Alive
6	ALL	Allo SCT (31)	Pneumonia	39	3.5	7	Major	Died
7	Hodgkin lymphoma	Allo SCT (33)	Pneumonia	65	3.3	18	-	Died
8	ALL	Allo SCT (203)	Pneumonia	68	3.3	10	-	Died
9	DLBCL	Induction on ECMO	Pneumonia	102	4.0	4	-	Died
10	Multiple myeloma	Auto SCT (789)	Pneumonia	43	3.7	9	Major	Alive
11	Anaplastic T-cell NHL[a]	Induction on ECMO	Pneumonia	46	3.0	25[d]	Major	Alive
12	DLBCL[a]	Induction on ECMO	NHL	36	3.3	3[c]	-	Alive
13	AML	Consolidation (34)	Pneumonia	48	3.3	34	Major	Died
14	DLBCL[a]	Induction on ECMO	NHL	56	2.3	4[d]	-	Alive

ALL, acute lymphoblastic leukemia; allo SCT, allogeneic stem cell transplantation; AML, acute myeloid leukemia; ARF, acute respiratory failure; auto SCT, autologous stem cell transplantation; CNS, central nervous system; DLBCL, diffuse large B-cell lymphoma; ECMO, extracorporeal membrane oxygenation; ICU, intensive care unit; LIS, lung injury score at ECMO baseline [30]; NHL, non-Hodgkin lymphoma; SAPS II, simplified acute physiology score at ICU admission [27]; TRALI, transfusion-related acute lung injury. [a]Diagnosis of hematologic malignancy on ECMO; [b]Two episodes of ECMO; [c]ventoarterial ECMO; [d]three episodes of ECMO.

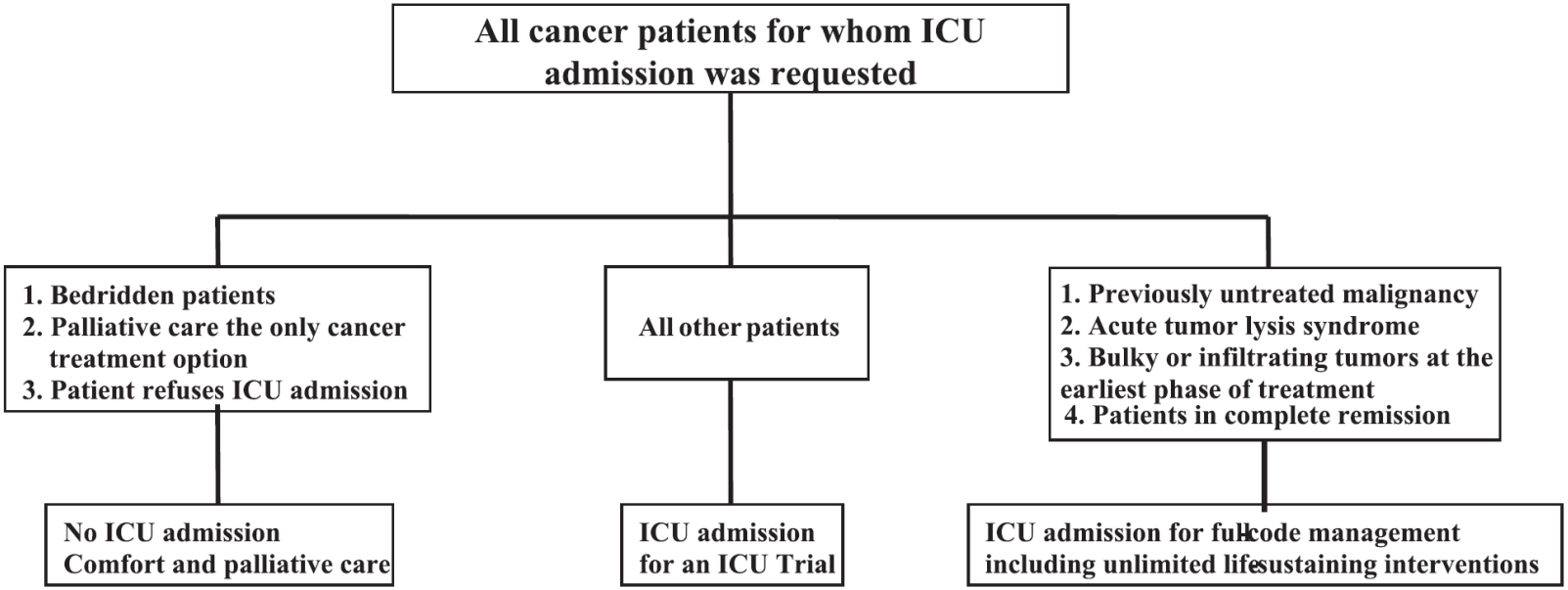
Mortalité 50%

Wohlfarth *et al. Critical Care* 2014, **18**:R20

Qui admettre?

The ICU Trial: A new admission policy for cancer patients requiring mechanical ventilation*

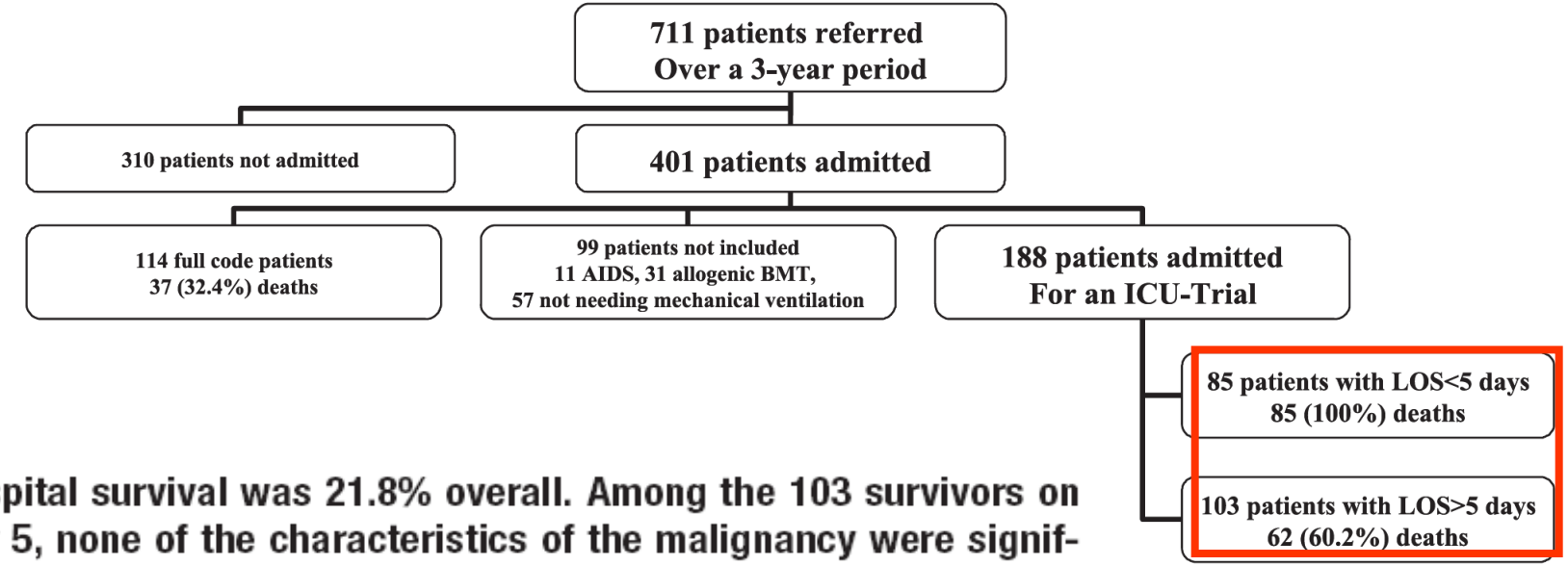
Lucien Lecuyer, MD; Sylvie Chevret, MD, PhD; Guillaume Thiery, MD; Michael Darmon, MD; Benoît Schlemmer, MD; Élie Azoulay, MD, PhD



ıre 1. Intensive care unit (*ICU*) admission policy initiated in 2001 at the Saint-Louis Hospital.

Crit Care Med 2007 Vol. 35, No. 3

Evolution/ré-évaluation



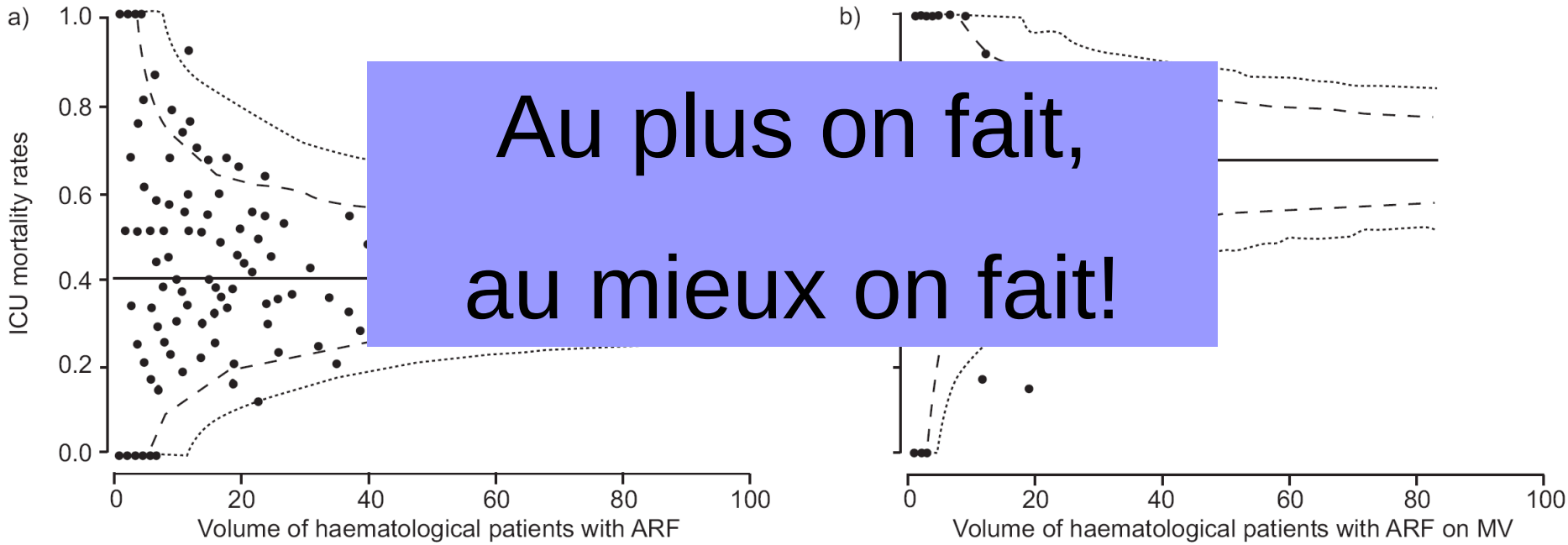
Hospital survival was 21.8% overall. Among the 103 survivors on day 5, none of the characteristics of the malignancy were significantly different between the 62 patients who died and the 41 who survived. Time course of organ dysfunction over the first 6 ICU days differed significantly between survivors and nonsurvivors. Organ failure scores were more accurate on day 6 than at admission or on day 3 for predicting survival. All patients who required initiation of mechanical ventilation, vasopressors, or dialysis after 3 days in the ICU died.

Comment faire mieux?

Case volume and mortality in haematological patients with acute respiratory failure

L. Lecuyer*,#,¶,+, S. Chevret*,#,¶,+, B. Guidet*,#,§, P. Aegerter*,#,+, P. Martel*,#
B. Schlemmer*,#,¶,+ and É. Azoulay*,#,¶,+

154563 critically ill patients



Au plus on fait,

au mieux on fait!

521 patients did not require ventilatory support

Mortality rate 6.90%

265 patients required noninvasive mechanical ventilation

Mortality rate 11.69%

967 patients required invasive mechanical ventilation

Mortality rate 66.7%

Eur Respir J 2008; 32: 748–754

On s'améliore!

Fig. 2 Hospital mortality according to period of admission to the intensive care unit

Intensive Care Med (2014) 40:1106–1114

Conclusions

- 50% patients onco-hémato
- Etiologie infectieuse, hémorragie, tumorale, toxique
- Type de tumeur, clinique, délai, aspect radiologique
- Tests non invasifs
- Mortalité 50%
- Triage
- Ré-évaluation

GRRROH (Groupe de Recherche en Réanimation Respiratoire en Onco-Hématologie)

www.grrroh.com

Ventilation Non Invasive Précoce au cours de l’Insuffisance Respiratoire Aiguë chez le patient immunodéprimé .

Essai Prospectif Multicentrique Randomisé Contrôlé :

I-VNI-ctus