# Réanimation des patients d'oncohématologie (POH)

Collège de Réanimation Médicale

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# Sepsis chez les malades cancéreux en Réa: évolution clinique et facteurs pronostiques

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## Critically ill patients with cancer and sepsis: Clinical course and prognostic factors☆,☆☆,★

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# Introduction

- POH: terrain d'immunosuppression (chimiothérapie, irradiations, corticoïdes…)
- Sepsis: Risque important, motif d'hopsitalisation en Réa
- Morbidité, mortalité élevées

# Objectif:

- Déterminer les caractéristiques et l'évolution clinique des malades ayant un cancer, hospitalisés en Réa pour sepsis
- Préciser les facteurs indépendamment associés à la mortalité chez ces malades

# Patients et méthodes:

- Etude prospective: cohort study: Janvier 2003 et Juillet 2007

Critères d'inclusion:

- Adultes >18 ans
- Ayant un cancer admis en réa pour sepsis

Critères de non inclusion:

- Rémission complète >5ans
- Séjour<24h
- réadmissions

# Analyse Statistique:

- Les variables continues sont exprimées en médiane (± IQR).
- Une analyse univariée et multivariée (régression logistique) a été réalisée pour déterminer les variables associées à la mortalité chez ces malades.

# Résultats:

## Caractéristiques de le population étudiée et de de l'infection en cause du sepsis



**Table 1** Main patients' characteristics and outcomes

| Variables | All patients (n = 563) |
|---|---|
| Demographics | |
| Age (y) | 59.2 ± 17.8 |
| Male sex | 301 (54%) |
| Comorbidity score (ACE-27) | |
| None-mild | 424 (75%) |
| Moderate-severe | 139 (25%) |
| Cancer-related characteristics | |
| Type of cancer | |
| Locoregional solid tumor | 348 (62%) |
| Metastatic solid tumor | 88 (16%) |
| Low-grade hematologic malignancy | 39 (7%) |
| High-grade hematologic malignancy | 88 (16%) |
| Cancer status | |
| Controlled/remission | 260 (46%) |
| Active—newly diagnosed | 200 (36%) |
| Active—recurrence/progression | 103 (18%) |
| Performance status | |
| 0-1 | 269 (48%) |
| 2-4 | 294 (52%) |
| Neutropenia | 71 (13%) |
| Severity of acute illness at ICU admission | |
| SAPS II score (points) | 51.0 ± 16.1 |
| SAPS II–predicted mortality (%) | 48.4 ± 26.8 |
| SOFA on the first day of ICU (points) | 8 (5-11) |
| Acute organ failures (n) | 2 (1-3) |
| Mechanical ventilation | 489 (87%) |
| Dialysis | 110 (20%) |
| Vasopressors | 372 (64%) |
| Outcome data | |
| ICU LOS (d) | 9 (4-18) |
| Hospital LOS (d) | 23 (11-43) |
| End-of-life decisions at the ICU | 165 (29%) |
| ICU mortality | 289 (51%) |
| Hospital mortality | 364 (65%) |
| 6-mo mortality | 407 (72%) |

Results are expressed as mean ± SD, median (25%–75% interquartile range), and n (%). LOS indicates length of stay; ACE-27, Adult Comorbidity Evaluation—27.

| Variables | All patients (n = 563) |
|---|---|
| Proof of infection | |
| Clinically suspected | 180 (32%) |
| Microbiologically proven | 383 (68%) |
| Severity | |
| Sepsis | 48 (9%) |
| Severe sepsis | 143 (25%) |
| Septic shock | 372 (66%) |
| Acquisition | |
| Community acquired | 227 (40%) |
| Nosocomial | 336 (60%) |
| Positive blood cultures | 114 (20%) |
| Pathogens[a] | |
| Gram-positive bacteria | 168 (30%) |
| Enterococci | 92 (16%) |
| *Staphylococcus aureus* | 61 (11%) |
| Streptococci group D | 16 (3%) |
| Pneumococci | 13 (2%) |
| Other | 12 (3%) |
| Gram-negative bacteria | 297 (53%) |
| *Escherichia coli* | 91 (16%) |
| *Pseudomonas* | 74 (13%) |
| *Klebsiella* | 72 (13%) |
| *Enterobacter* | 46 (8%) |
| *Proteus* | 34 (6%) |
| *Morganella* | 18 (4%) |
| *Stenotrophomonas maltophilia* | 14 (3%) |
| Other | 92 (16%) |
| Fungi | 43 (8%) |
| *Candida* species | 35 (6%) |
| Other fungi | 8 (1%) |
| Other infectious agents | 19 (3%) |
| Multiresistant bacteria | 81 (14%) |
| Site of infection | |
| Lung | 246 (44%) |
| Abdomen | 172 (31%) |
| Urinary tract | 42 (8%) |
| Skin/soft tissue | 35 (6%) |
| Primary bloodstream infection | 24 (4%) |
| Central nervous system | 11 (2%) |
| Other/unknown | 57 (10%) |
| More than 1 site of infection | 24 (4%) |

Results expressed as mean ± SD, median (25%–75% interquartile range), and n (%).

[a] Three hundred eighty-three patients had microbiologically proven infections; patients could have more than 1 pathogen.

# Résultats:

Analyse multivariée: facteurs associés à la mortalité

**Table 3** Multivariate analysis of hospital mortality predictors

| Variables | Coefficients | OR (95% CI) | P |
|---|---|---|---|
| Type of admission | | | |
| Emergency surgery | | 1.00 | |
| Medical | 0.784 | 2.19 (1.40-3.42) | .001 |
| Cancer status | | | |
| Controlled/remission | | 1.00 | |
| Active—newly diagnosed | 0.565 | 1.76 (1.12-2.75) | .013 |
| Active—recurrence/ progression | 0.884 | 2.42 (1.35-4.35) | .003 |
| Performance status | | | |
| 0-1 | | 1.00 | |
| 2-4 | 1.272 | 3.57 (2.36-5.97) | <.001 |
| Site of infection | | | |
| Urinary tract infection | | 1.00 | |
| Indeteminate or other site of infection | 1.189 | 3.28 (1.57 6.86) | .002 |
| SIRS criteria (n) | | | |
| At least 2 | | 1 | |
| 3 or 4 | 0.589 | 1.80 (1.20-2.72) | .014 |
| Organ dysfunctions | | | |
| Cardiovascular[a] | 0.664 | 1.94 (1.27-2.94) | .008 |
| Respiratory[a] | 0.827 | 2.29 (1.24-4.23) | .002 |
| Renal | 0.750 | 2.12 (1.34-3.35) | .001 |
| Constant | −3.568 | | |

n = 563.
Area under receiver operating characteristic curve, 0.80 (95% CI, 0.76-0.84); Hosmer-Lemeshow goodness-of-fit ($\chi^2$ = 6.106, $P$ = .635).
OR indicates odds ratio.
[a] For these variables, the OR are also affected by the associated interaction term: cardiovascular dysfunction × respiratory dysfunction (coefficient, 1.839; odds ratio, 6.29 [1.19-33.32]; $P$ = .032).

# Résultats:

## Courbes de survie de Kaplan-Meier

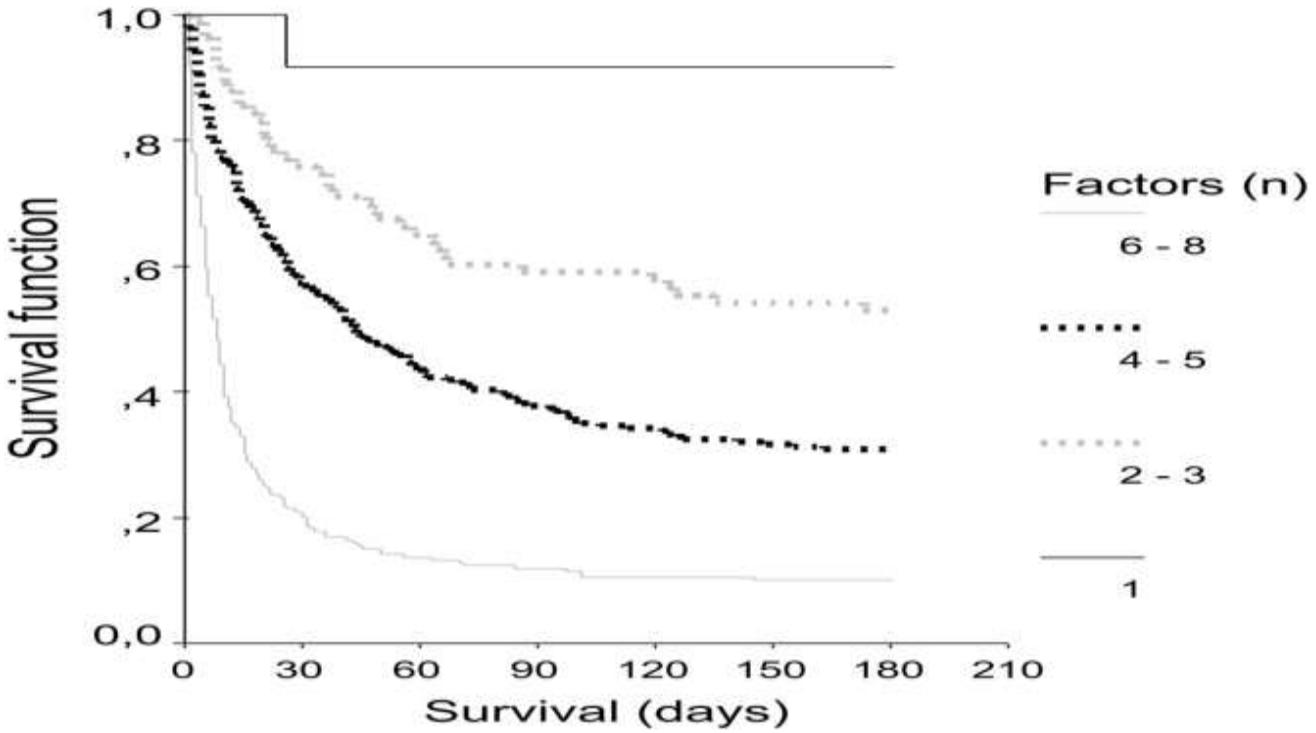


Fig. 1 Survival curves for patients with cancer and sepsis according to the number of independent risk factors (log-rank test, 143.26; P b .001). Patients were classified into categories of risk for death: low (1 factor), moderate (2 or 3 factors), high (4 or 5 factors), and very high risk (6-8 factors).

# Conclusion:

- Le sepsis est une complication fréquente chez les malades ayant un cancer
- associé à une mortalité élévée.
- Aide les réanimateurs et les oncologistes a une meilleure décision thérapeutique
- Discussion avec les patients et leurs familles
- Contribue à une meilleure stratification du risque
- Besoins d'autres études

# Facteurs de risque de SDRA chez les malades d'oncohématologie en neutropénie fébrile

**Available online** http://ccforum.com/content/13/6/R173

Research

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## Risk factors for acute respiratory distress syndrome during neutropenia recovery in patients with hematologic malignancies

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# Introduction

- La neutropénie peut être associée à une détérioration de l'oxygénation et une exacerbation d'une pathologie pulmonaire préexistante
- FDR de SDRA chez les malades d'OH n'ont pas été étudiés

Objectifs:

- Description des ces malades
- Déterminer les FDR de SDRA

## Patients et méthodes:

- Etude de cohorte, Mars 2002-Aout 2008
- Tous les malades d'OH hospitalisés en réa avec une neutropénie fébrile

# Résultats: Caractéristiques de la population

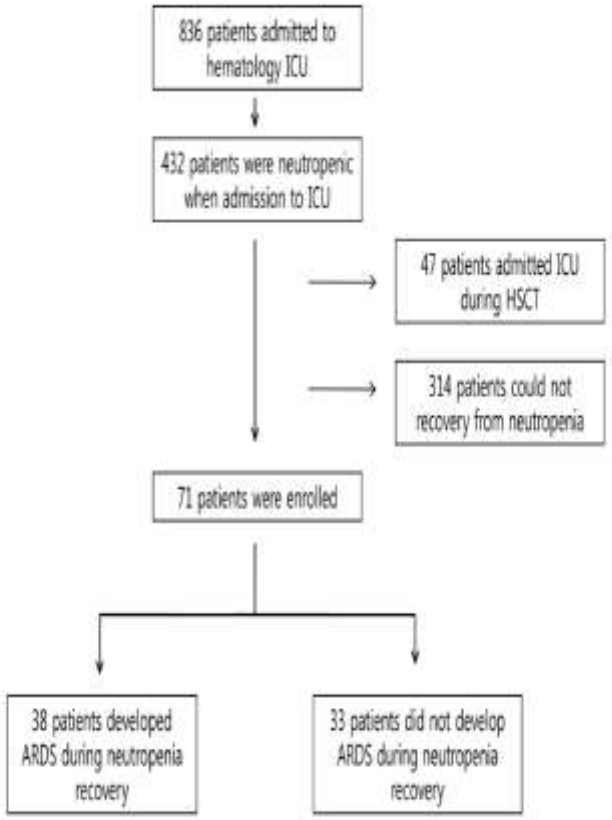
**Table 1**

**Characteristics of the 71 patients with hematologic malignancies who recovered from neutropenia during intensive care unit stay**

| Characteristic | No (%) or mean ± SEM |
|---|---|
| Age, year | 45.71 ± 1.50 |
| Male | 33 (46.5%) |
| AML | 35 (49.3%) |
| ALL | 22 (31.0%) |
| Lymphoma | 8 (11.3%) |
| Multiple myeloma | 4 (5.6%) |
| Relapsed malignancy | 17 (23.9%) |
| History of HSCT | 13 (18.3%) |
| Neutropenia duration, days | 22.54 ± 1.65 |
| ARDS during neutropenia recovery | 38 (53.5%) |
| Pneumonia during neutropenia | 45 (63.4%) |
| Mechanical ventilation | 53 (74.6%) |
| Renal replacement therapy | 21 (29.6%) |
| In-ICU mortality | 50 (70.4%) |

AML = acute myeloid leukemia; ALL = acute lymphoblastic leukemia; ARDS = acute respiratory distress syndrome; HSCT = hematopoietic stem cell transplantation; ICU = intensive care unit; SEM = standard error of the mean.

**Figure 1**



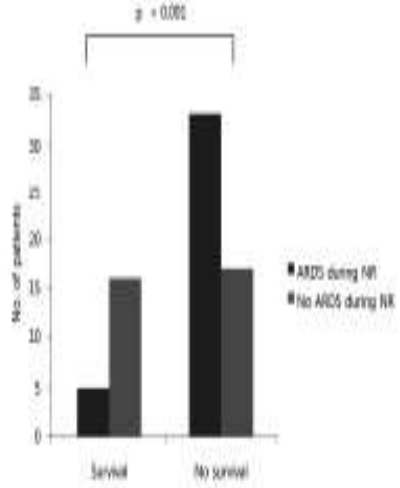

Study subjects. ARDS = acute respiratory distress syndrome; ICU = intensive care unit; HSCT = hematopoietic stem cell transplantation.

# Analyse univariée:

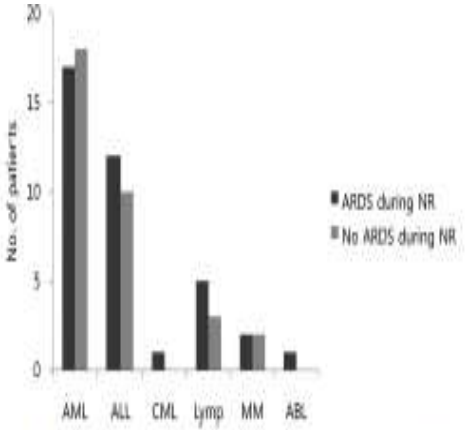
**Comparison of patients with and without ARDS during neutropenia recovery**

| | ARDS during NR | No ARDS during NR | Odd ratio | 95% CI | *P* value |
|---|---|---|---|---|---|
| Age | 45.99 ± 1.79 | 45.38 ± 2.51 | | | 0.84 |
| Male | 20 (52.6%) | 13 (39.4%) | 1.71 | 0.66-4.40 | 0.27 |
| AML | 17 (44.7%) | 18 (54.5%) | 0.68 | 0.26-1.72 | 0.41 |
| ALL | 12 (31.6%) | 10 (30.3%) | 1.06 | 0.39-2.91 | 0.91 |
| Relapsed malignancy | 10 (26.3%) | 7 (21.2%) | 1.33 | 0.44-3.99 | 0.62 |
| Time from diagnosis, days | 244 ± 98.7 | 140 ± 56.8 | | | 0.38 |
| Anthracycline treatment | 20 (52.6%) | 18 (54.5%) | 0.93 | 0.36-2.36 | 0.87 |
| Cyclophosphamide treatment | 9 (23.7%) | 5 (15.2%) | 1.74 | 0.52-5.83 | 0.37 |
| Methotrexate treatment | 6 (15.8%) | 3 (9.1%) | 1.88 | 0.43-8.12 | 0.49 |
| Total chemotherapy times | 2.79 ± 0.27 | 2.36 ± 0.25 | | | 0.26 |
| Total chemotherapy times ≥3 times | 20 (52.6%) | 14 (42.4%) | 1.51 | 0.59-3.86 | 0.39 |
| Previous history of HSCT | 8 (21.1%) | 5 (15.2%) | 1.88 | 0.43-8.18 | 0.52 |
| Time between chemotherapy and onset of neutropenia | 3.45 ± 0.69 | 2.18 ± 0.65 | | | 0.19 |
| Time between chemotherapy and onset of neutropenia >10 days | 3 (7.9%) | 1 (3.0%) | 2.74 | 0.27-27.73 | 0.62 |
| Neutropenia duration, days | 22.4 ± 2.3 | 22.7 ± 2.4 | | | 0.94 |
| Neutropenia duration >10 days | 34 (89.5%) | 26 (78.8%) | 2.29 | 0.61-8.66 | 0.22 |
| Platelet transfusion during neutropenia | 38 (100%) | 32 (97%) | | | 0.47 |
| Plasma transfusion during neutropenia | 33 (86.8%) | 26 (78.8%) | 1.78 | 0.51-6.25 | 0.37 |
| Pneumonia during neutropenia | 32 (84.2%) | 13 (39.4%) | 8.21 | 2.68-25.07 | < 0.001 |
| RRT during neutropenia | 13 (34.2%) | 8 (24.2%) | 1.63 | 0.57-4.60 | 0.36 |
| ICU admission for respiratory failure | 25 (65.8%) | 10 (30.3%) | 4.42 | 1.63-12.03 | 0.003 |
| Mechanical ventilator therapy | 34 (89.5%) | 19 (57.6%) | 6.26 | 1.80-21.75 | 0.002 |
| In-ICU mortality | 33 (86.8%) | 17 (51.5%) | | | < 0.001 |

Figure 2




Number of patients who survived or died during intensive care unit stay. ARDS = acute respiratory distress syndrome; NR = neutropenia recovery.




Number of patients according to underlying diseases. ABL = acute biphenotypic leukemia; AML = acute myeloid leukemia; ALL = acute lymphoblastic leukemia; ARDS = acute respiratory distress syndrome; CML = chronic myeloid leukemia; Lymp = lymphoma; MM = multiple myeloma; NR = neutropenia recovery.

# Analyse multivariée des caractéristiques des malades:

over, neutrophil function is defective because many neu- penia during HSCT. In HSCT, more intense chemotherapy is

**Table 3**

**Multivariate analysis of patient characteristics**

| | Odds ratio | 95% CI | *P* value |
|---|---|---|---|
| Mechanical ventilator | 3.68 | 0.91-14.82 | 0.067 |
| Pneumonia during neutropenia | 4.76 | 1.41-16.00 | 0.012 |
| ICU admission for respiratory failure | 2.44 | 0.79-7.57 | 0.121 |

ICU = intensive care unit. Goodness of fit (Hosmer-Lemeshow) chi-squared *P* value = 0.904.

- La survenue d'une pneumonie augmente le risque de SDRA chez les malades en neutropénie fébrile

# Conclusion:

- La survenue d'une pneumonie chez les POH en neutropénie fébrile augmente le risque de SDRA

Merci