

# **Anemia is associated with mortality and altered geriatric domains, in elderly patients with cancer.**

The ANCRAGE-02 cohort

E. Liuu, A. Jamet, M.L. Bureau, A. Caupenne, S. Valéro, M. Paccalin  
Geriatrics Department – Geriatry Oncology Clinic  
University Hospital of Poitiers (France)



# CONFLICT OF INTEREST DISCLOSURE

I have no potential conflict of interest to report

# BACKGROUND

- **Cancer:** major public health challenge, notably in older adults
- Management of cancer in elderly: recommendation for CGA
  - identification of health problems
  - correction of potential modifiable risk factors of poorer outcomes.

SIOG 2012, NCCN 2017

# BACKGROUND

- **Cancer:** major public health challenge, notably in older adults
- Management of cancer in elderly: recommendation for CGA
  - identification of health problems
  - correction of potential modifiable risk factors of poorer outcomes.

SIOG 2012, NCCN 2017

- **Anemia:** common condition in older adults

Patel, Semin Hematol 2008; Gaskell, BMC Geriatr 2008

- Association with mortality, disability, decline of quality of life

Balducci, CROH 2007; Eisenstaedt, Blood Rev 2016

# BACKGROUND

- **Cancer:** major public health challenge, notably in older adults
- Management of cancer in elderly: recommendation for CGA
  - identification of health problems
  - correction of potential modifiable risk factors of poorer outcomes.

SIOG 2012, NCCN 2017

- **Anemia:** common condition in older adults

Patel, Semin Hematol 2008; Gaskell, BMC Geriatr 2008

- Association with mortality, disability, decline of quality of life

Balducci, CROH 2007; Eisenstaedt, Blood Rev 2016

- **Objectives:** to assess the prevalence of anemia in a cohort of older cancer patients, to identify the associated factors and the prognostic value.

# PATIENTS AND METHODS

- ANCRAGE survey: prospective open cohort survey  
Inclusion of consecutive patients aged  $\geq 75$  years  
Solid cancers or hematological malignancies  
Referred to the geriatric oncology clinic of Poitiers University hospital



# PATIENTS AND METHODS

- ANCRAGE survey: prospective open cohort survey  
Inclusion of consecutive patients aged  $\geq 75$  years  
Solid cancers or hematological malignancies  
Referred to the geriatric oncology clinic of Poitiers University hospital
- ANCRAGE-02: inclusion between January 2009 and December 2016



# PATIENTS AND METHODS



- ANCRAGE survey: prospective open cohort survey  
Inclusion of consecutive patients aged  $\geq 75$  years  
Solid cancers or hematological malignancies  
Referred to the geriatric oncology clinic of Poitiers University hospital

- ANCRAGE-02: inclusion between January 2009 and December 2016

- CGA: functional status, mobility, nutrition, mood, cognitive status, comorbidities

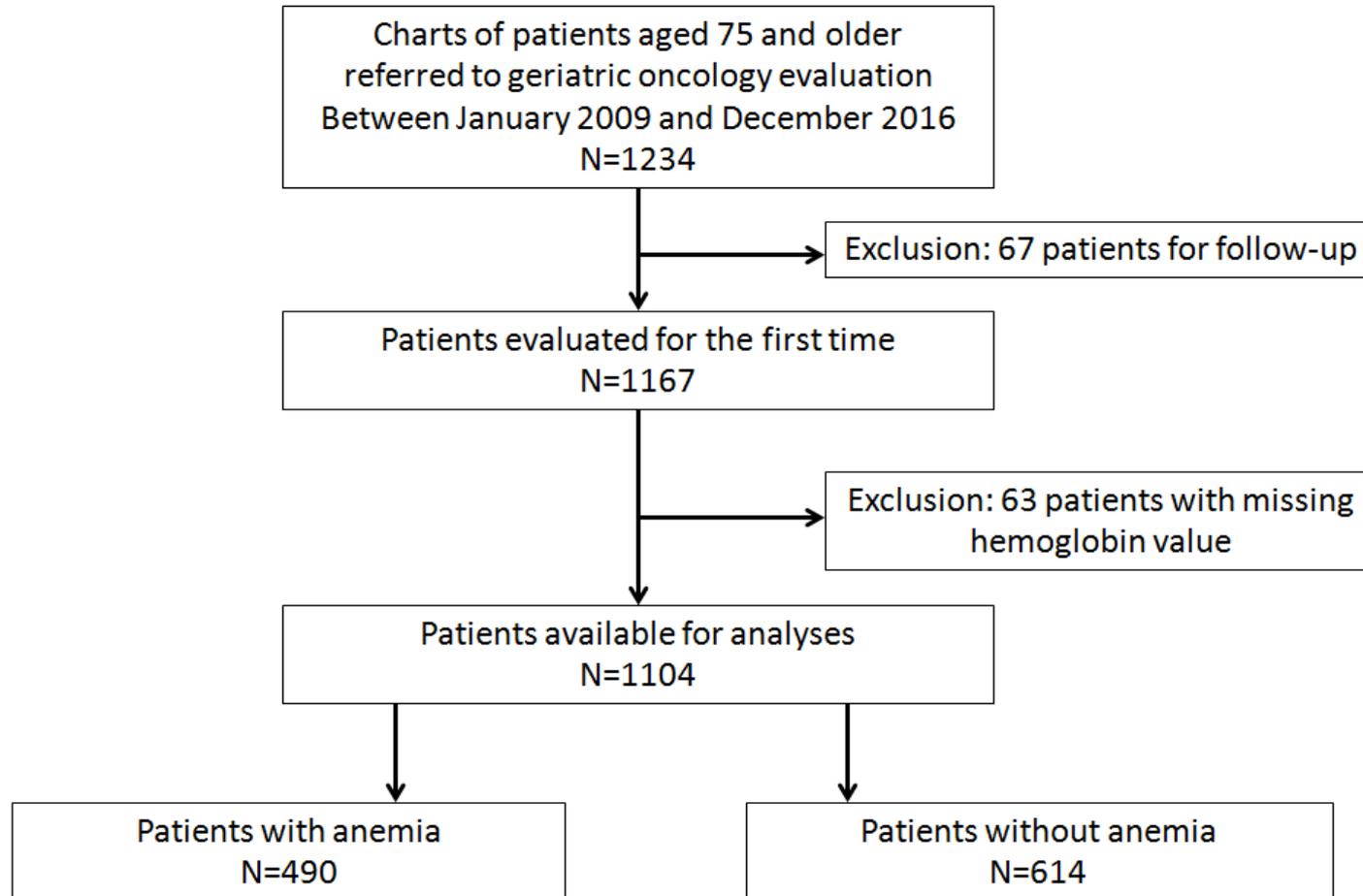
- Anemia: WHO criteria: 

♂	<130 g/L	♀	<120 g/L
mild	♂ 110-129 g/L	♀	110/119 g/L
moderate	80-109 g/L		
severe	< 80 g/L		

- Survival



# FLOW CHART



# RESULTS

## Characteristics of patients

- Mean age: 81.8 ± 4.9 years
- Female: 49%
  
- Most frequent cancer types: breast (16%), urinary tract (15%), prostate (14%), skin (12%) and colorectal (11%).
- Metastatic disease: 30%
  
- Anemia in 490 patients (44%): severe in 6 patients, moderate in 195 patients (41%) mild in 289 patients (59%)

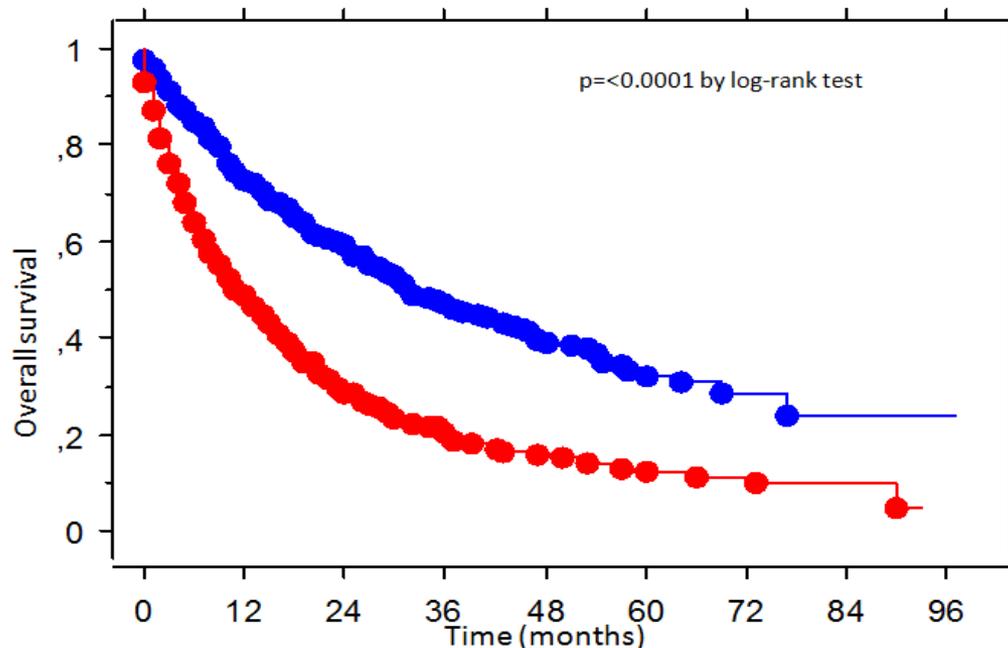
# CGA data according to anemia and its severity

	No anemia	Anemia	P	Mild	Moderate	Severe	p
ADL ≤ 5/6	144 (23%)	191 (39%)	<b>&lt;0.0001</b>	99 (34%)	91 (47%)	3 (50%)	<b>&lt;0.0001</b>
Risk of falls	284 (46%)	265 (54%)	<b>0.0001</b>	154 (53%)	109 (56%)	2 (33%)	<b>0.0005</b>
MNA < 23/30	301 (49%)	280 (57%)	<b>&lt;0.0001</b>	158 (55%)	119 (61%)	3 (50%)	<b>&lt;0.0001</b>
GDS ≥ 6/15	148 (24%)	160 (33%)	<b>&lt;0.0001</b>	82 (28%)	76 (39%)	2 (33%)	<b>&lt;0.0001</b>
MMSE ≤ 24/30	121 (20%)	104 (21%)	<b>&lt;0.0001</b>	62 (21%)	42 (22%)	0	<b>&lt;0.0001</b>
CIRS-G	5.9 ± 3.3	7.8 ± 4.2	<b>&lt;0.0001</b>	7.3 ± 3.9	8.5 ± 4.5	10.0 ± 5.5	<b>&lt; 0.0001</b>

# CGA data according to anemia and its severity

	No anemia	Anemia	P	Mild	Moderate	Severe	p
ADL ≤ 5/6	144 (23%)	191 (39%)	<b>&lt;0.0001</b>	99 (34%)	91 (47%)	3 (50%)	<b>&lt;0.0001</b>
Risk of falls	284 (46%)	265 (54%)	<b>0.0001</b>	154 (53%)	109 (56%)	2 (33%)	<b>0.0005</b>
MNA < 23/30	301 (49%)	280 (57%)	<b>&lt;0.0001</b>	158 (55%)	119 (61%)	3 (50%)	<b>&lt;0.0001</b>
GDS ≥ 6/15	148 (24%)	160 (33%)	<b>&lt;0.0001</b>	82 (28%)	76 (39%)	2 (33%)	<b>&lt;0.0001</b>
MMSE ≤ 24/30	121 (20%)	104 (21%)	<b>&lt;0.0001</b>	62 (21%)	42 (22%)	0	<b>&lt;0.0001</b>
CIRS-G	5.9 ± 3.3	7.8 ± 4.2	<b>&lt;0.0001</b>	7.3 ± 3.9	8.5 ± 4.5	10.0 ± 5.5	<b>&lt; 0.0001</b>

# Kaplan-Meier plot for survival in anemic vs. non anemic patients

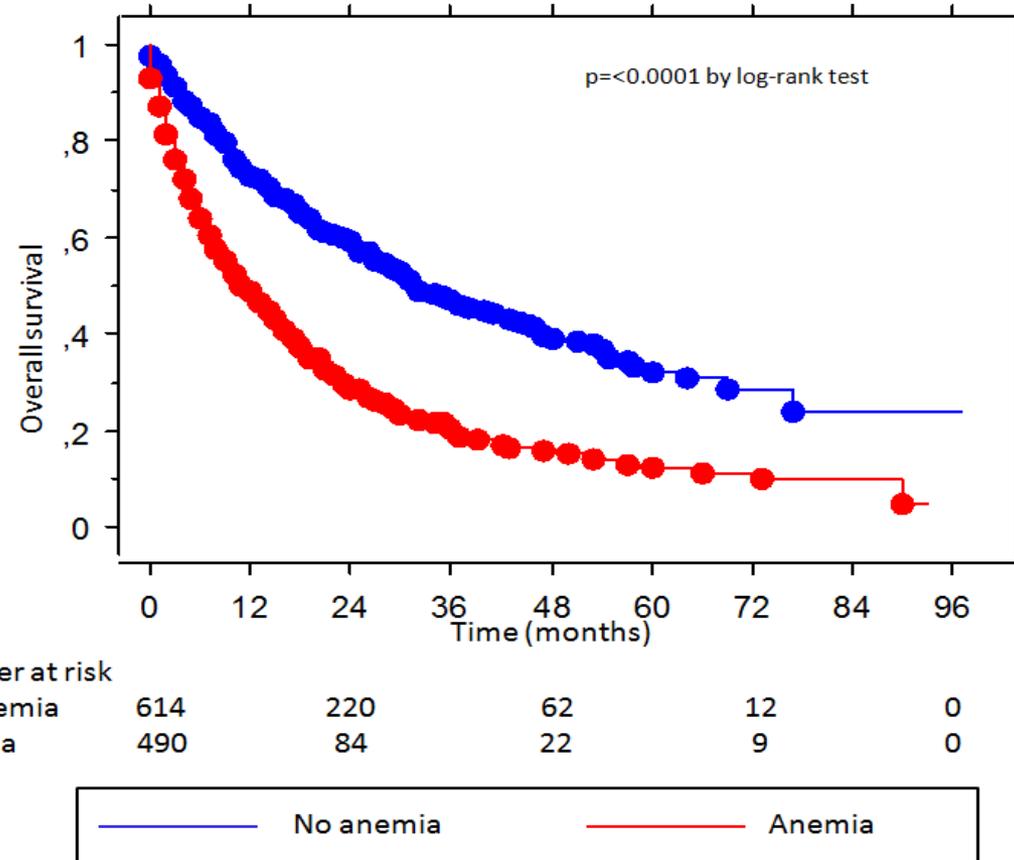


Number at risk

No anemia	614	220	62	12	0
Anemia	490	84	22	9	0

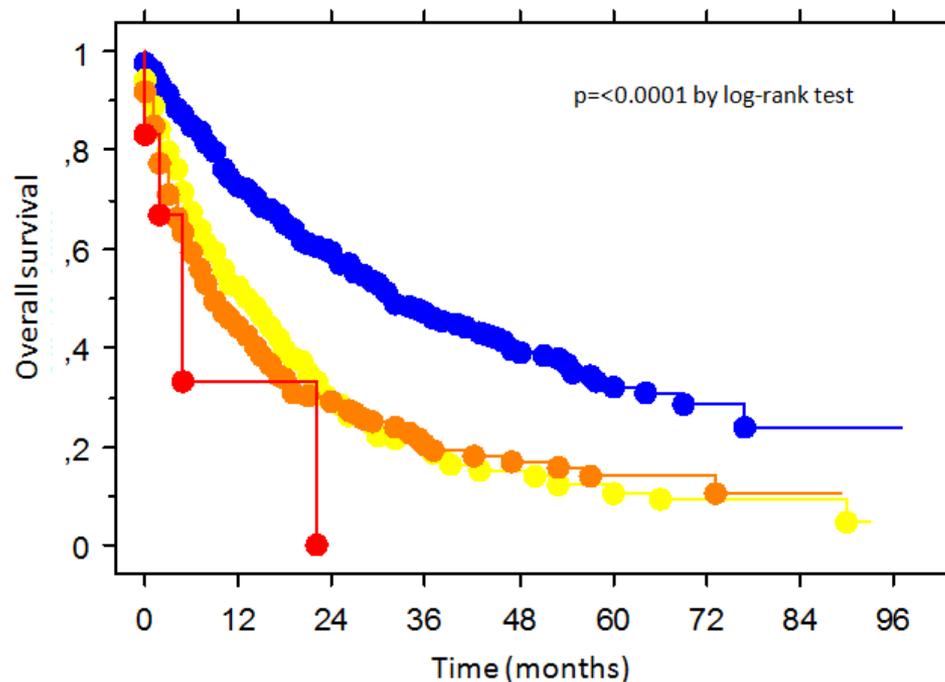


# Kaplan-Meier plot for survival in anemic vs. non anemic patients



Multivariate analysis: aHR = 1.59 (95% CI, 1.34-1.89,  $p < 0.0001$ )

# Kaplan-Meier plot for survival according to severity of anemia



Number at risk	0	12	24	36	48	60	72	84	96
No anemia	614	220	62	12	0	0	0	0	0
Mild anemia	289	48	9	4	0	0	0	0	0
Moderate anemia	195	35	12	4	0	0	0	0	0
Severe anemia	6	0	0	0	0	0	0	0	0



# CONCLUSION

- High prevalence of anemia in elderly patients with cancer.
- Strong association with higher prevalence of altered geriatric domains and poorer survival.

# CONCLUSION

- High prevalence of anemia in elderly patients with cancer.
- Strong association with higher prevalence of altered geriatric domains and poorer survival.



paves the way for prospective interventional studies, in geriatric oncology settings, taking account of a systematic recognition and control of anemia.