



# Défaillance digestive en réanimation

Dr Gaël Piton, MD, PhD  
Service de Réanimation Médicale  
CHRU de Besançon

# PLAN

Quelle défaillance ?

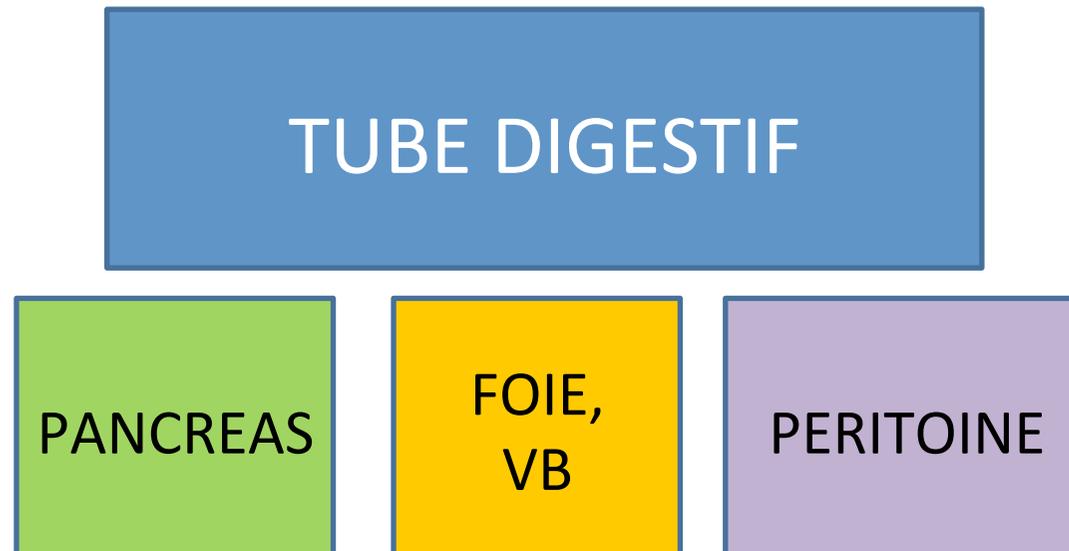
Clinique

Echographie ?

Biomarqueurs entérocytaires

Perspectives

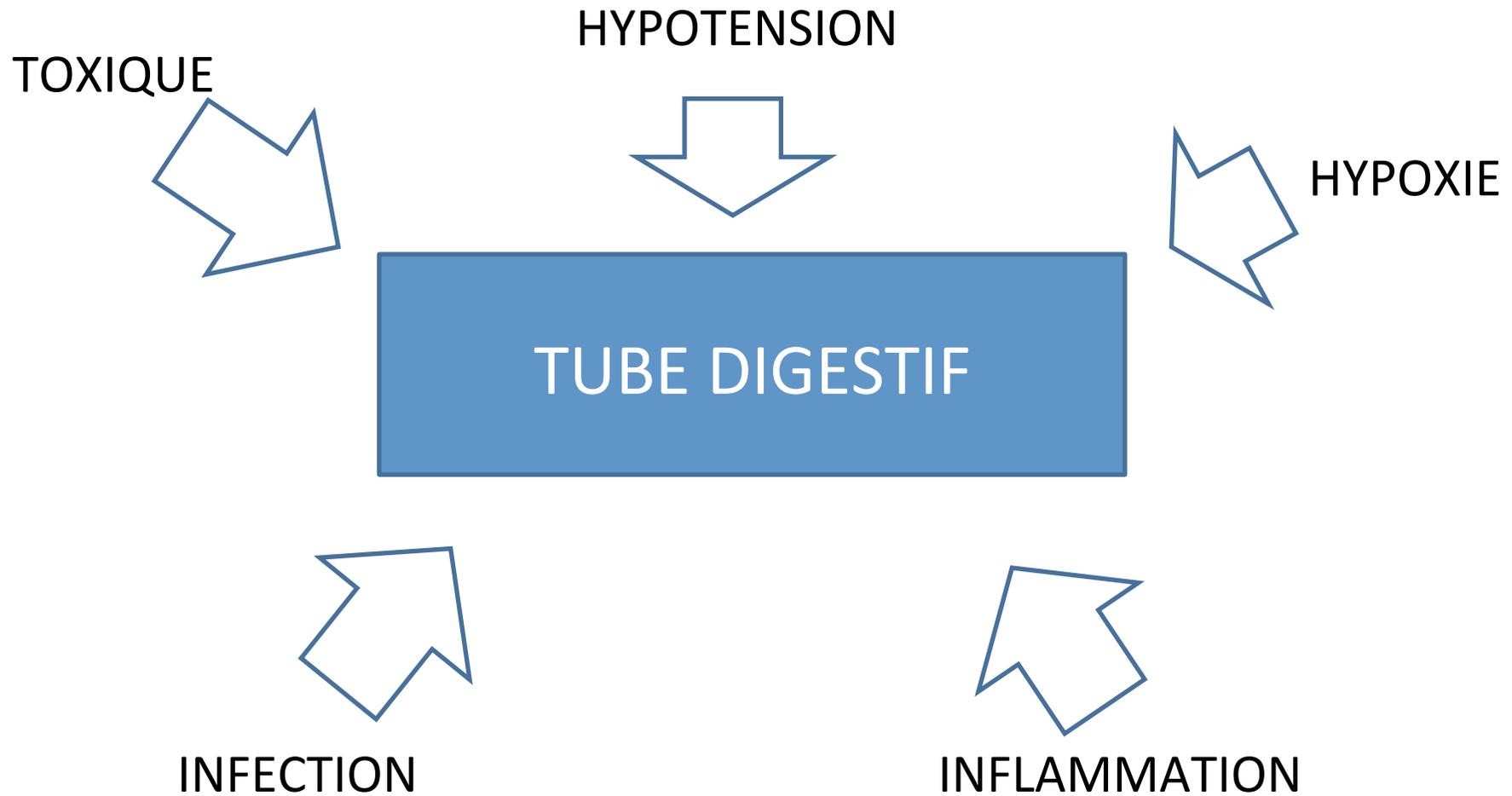
Défaillance digestive: laquelle ?



Défaillance digestive: laquelle ?

TUBE DIGESTIF

# Tube digestif, victime ?



---

Park/Chiu

---

Chiu

0. Normal mucosa
1. Subepithelial space at villus tips
2. Extension of subepithelial space with moderate lifting
3. Massive lifting down sides of villi, some denuded tips
4. Denuded villi, dilated capillaries
5. Disintegration of lamina propria

Park

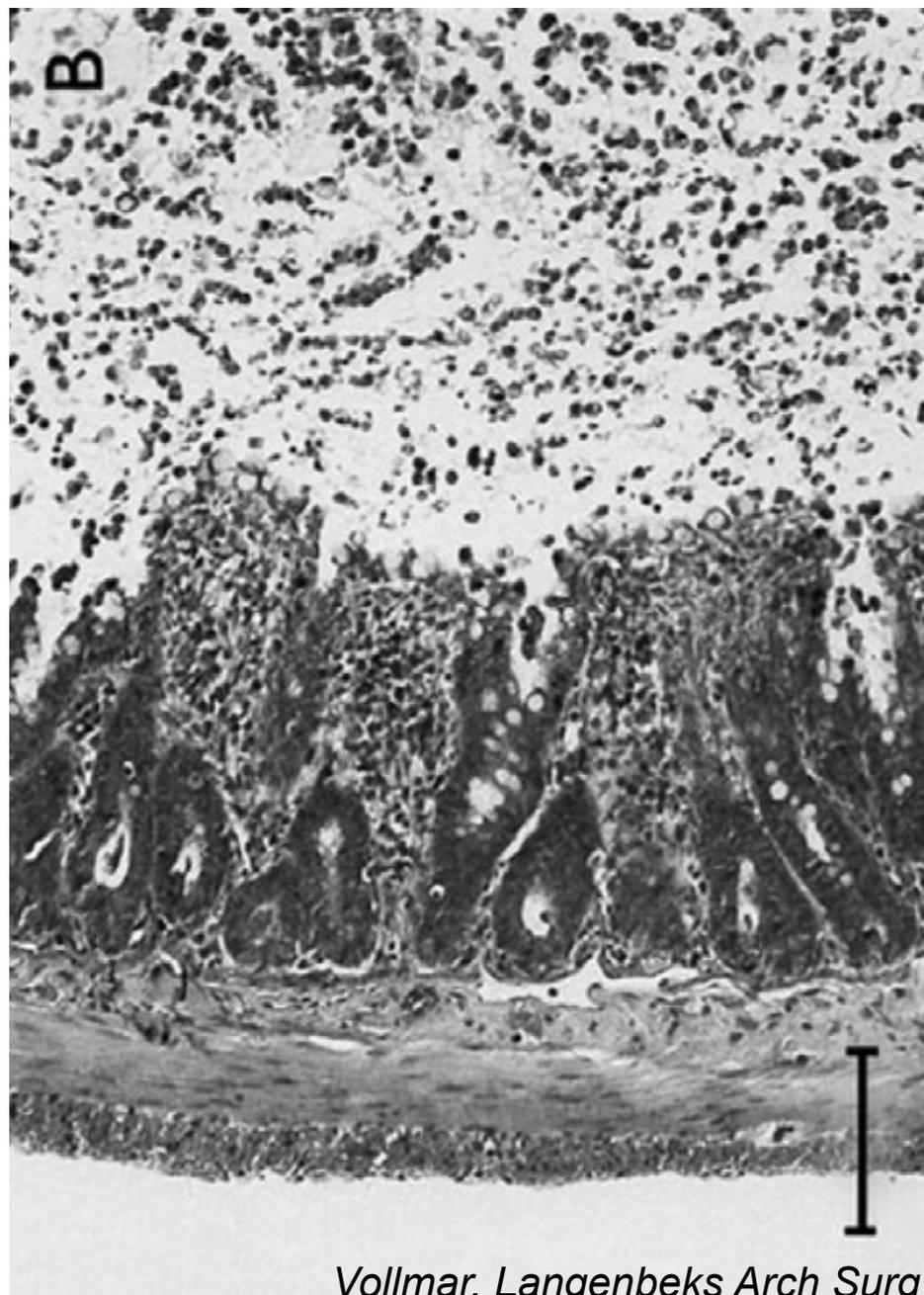
6. Crypt layer injury
7. Transmucosal infarction
8. Transmural infarction

Villosités normales  
(rat)



*Vollmar, Langenbeks Arch Surg 2011*

Villosités après  
- 30 mn ischémie  
- 1h reperfusion  
(rat)

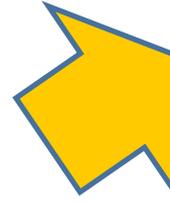
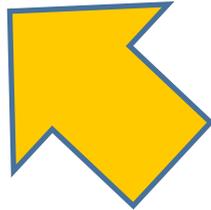


*Vollmar, Langenbeks Arch Surg 2011*

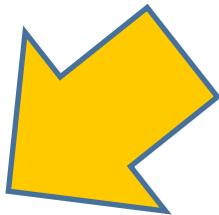
# Tube digestif, coupable ?

HEMODYNAMIQUE

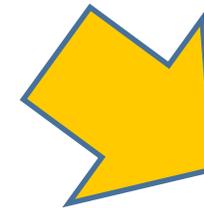
HEMORRAGIE



DENUTRITION

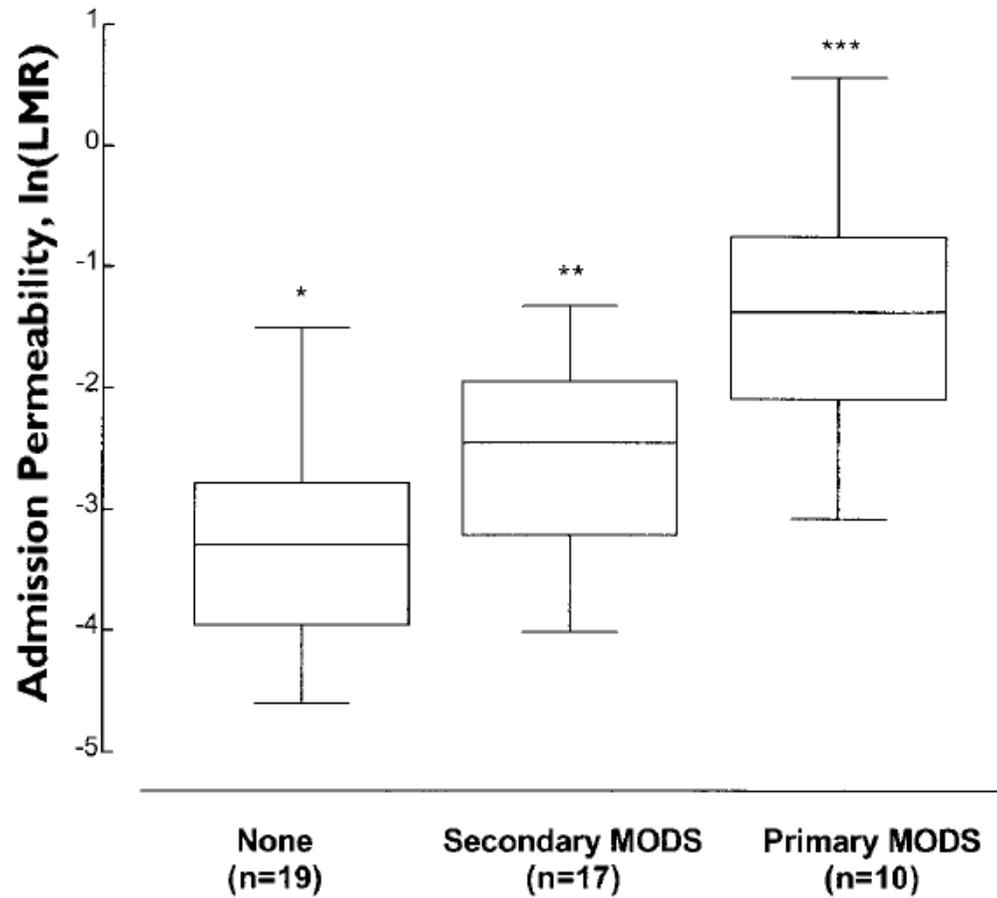


SEPSIS

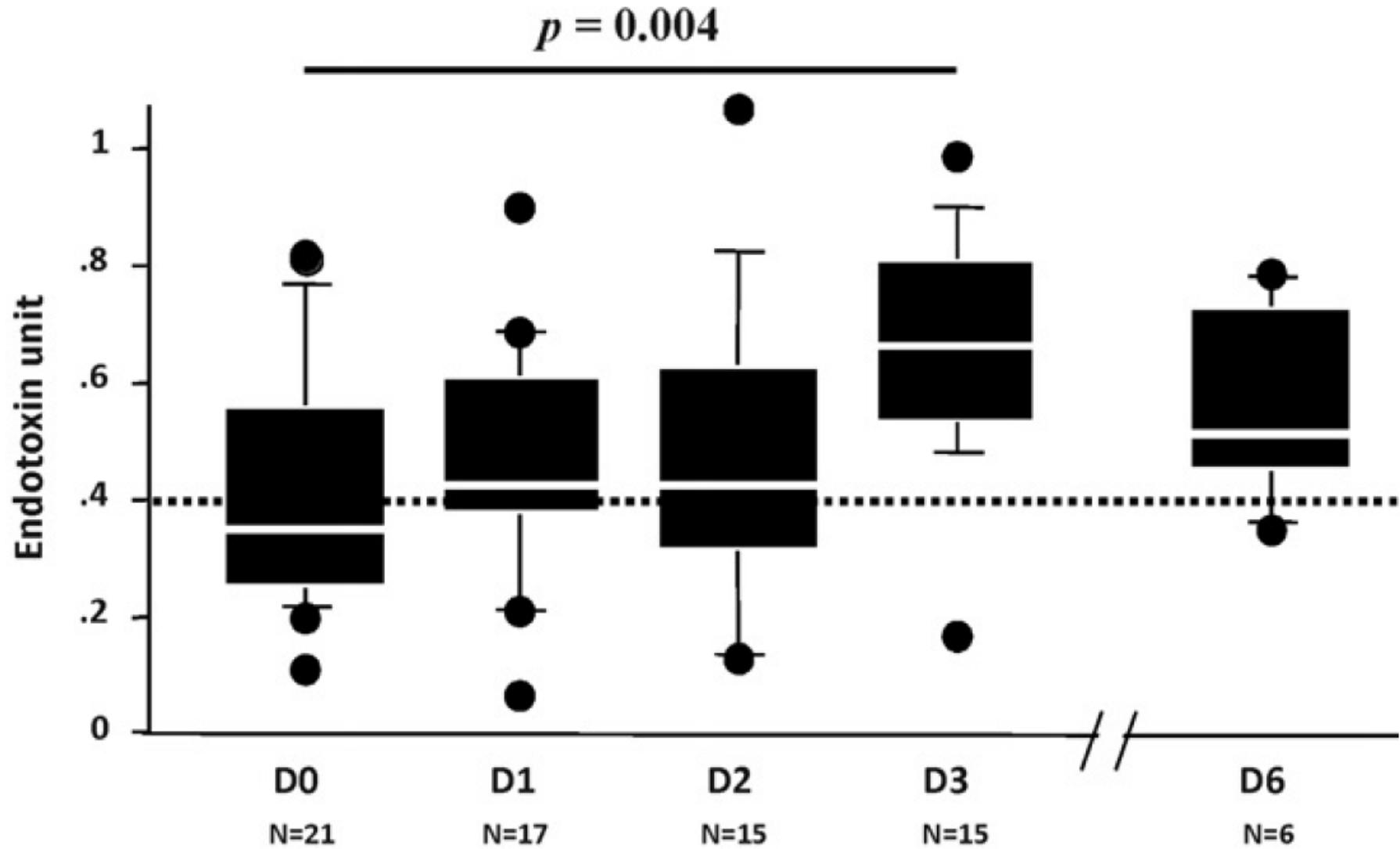


INFLAMMATION

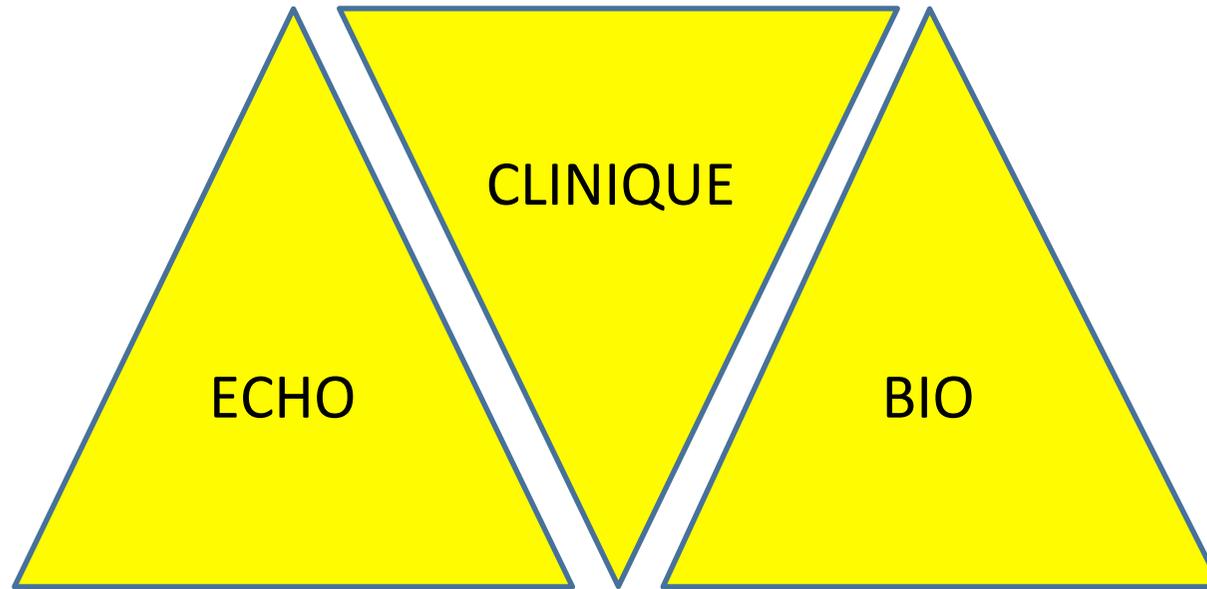
# L'augmentation de perméabilité intestinale précède la défaillance multiviscérale



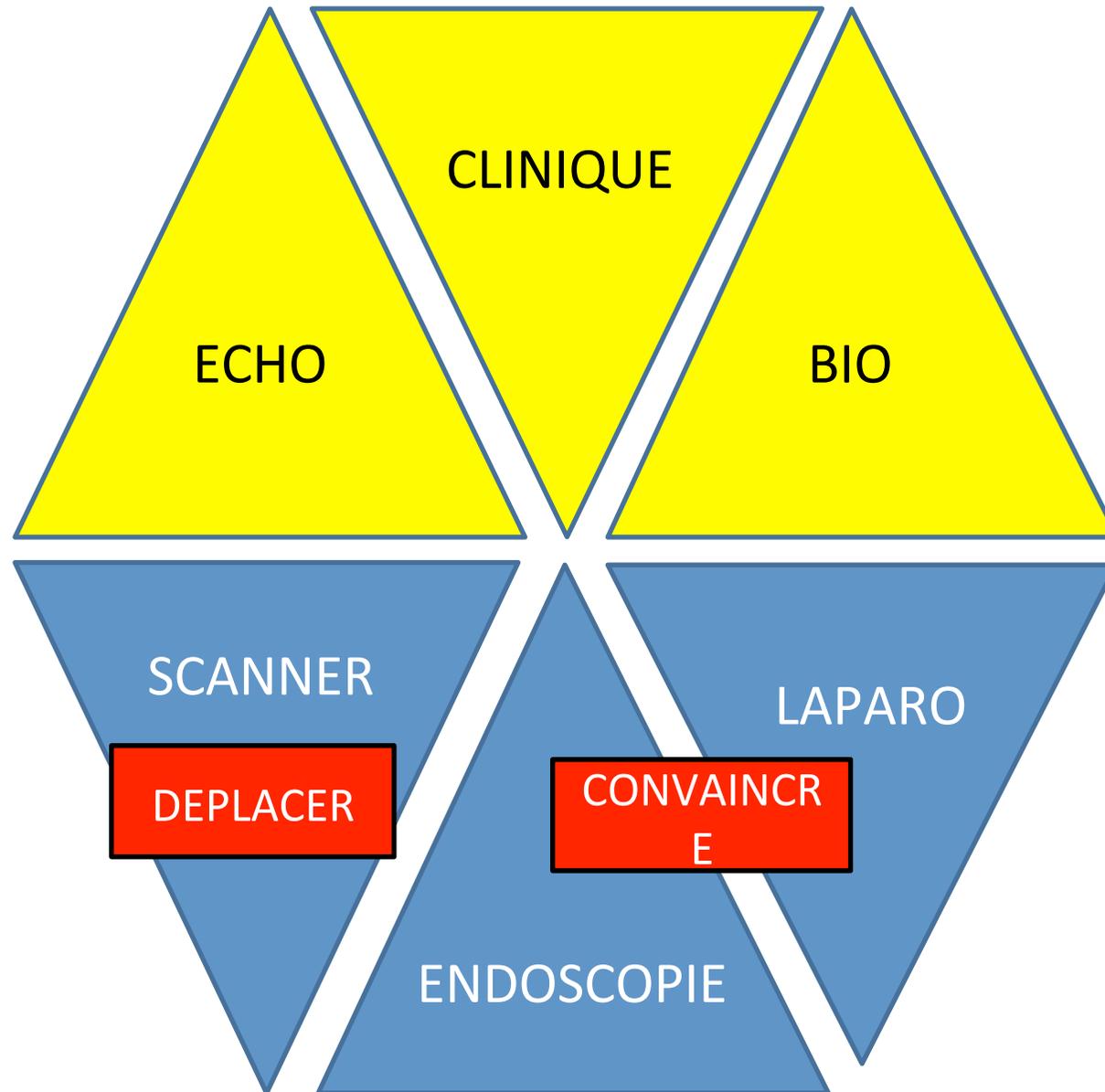
# Endotoxinémie après un ACR

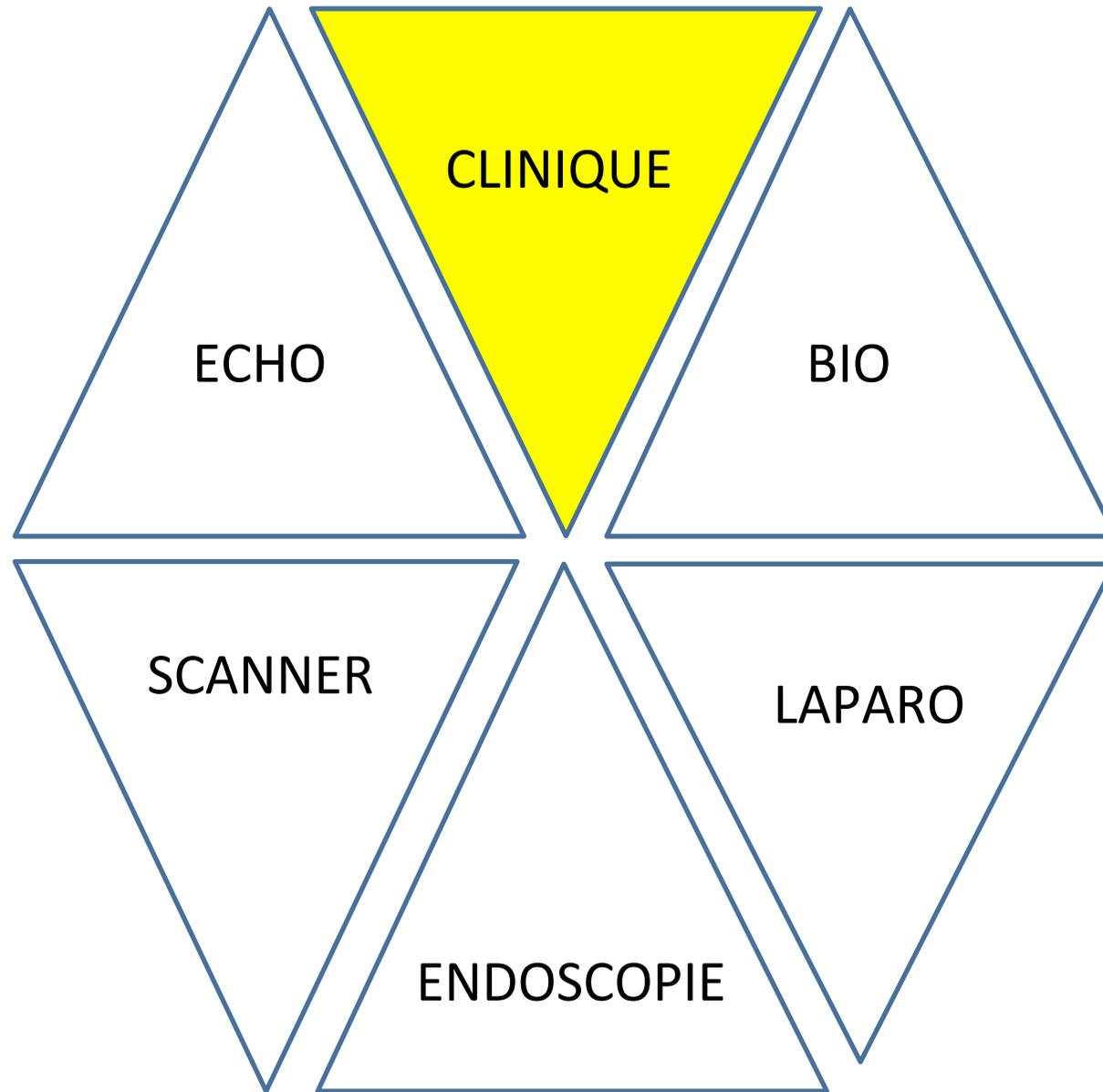


# Puzzle diagnostique



# Puzzle diagnostique





CLINIQUE

ECHO

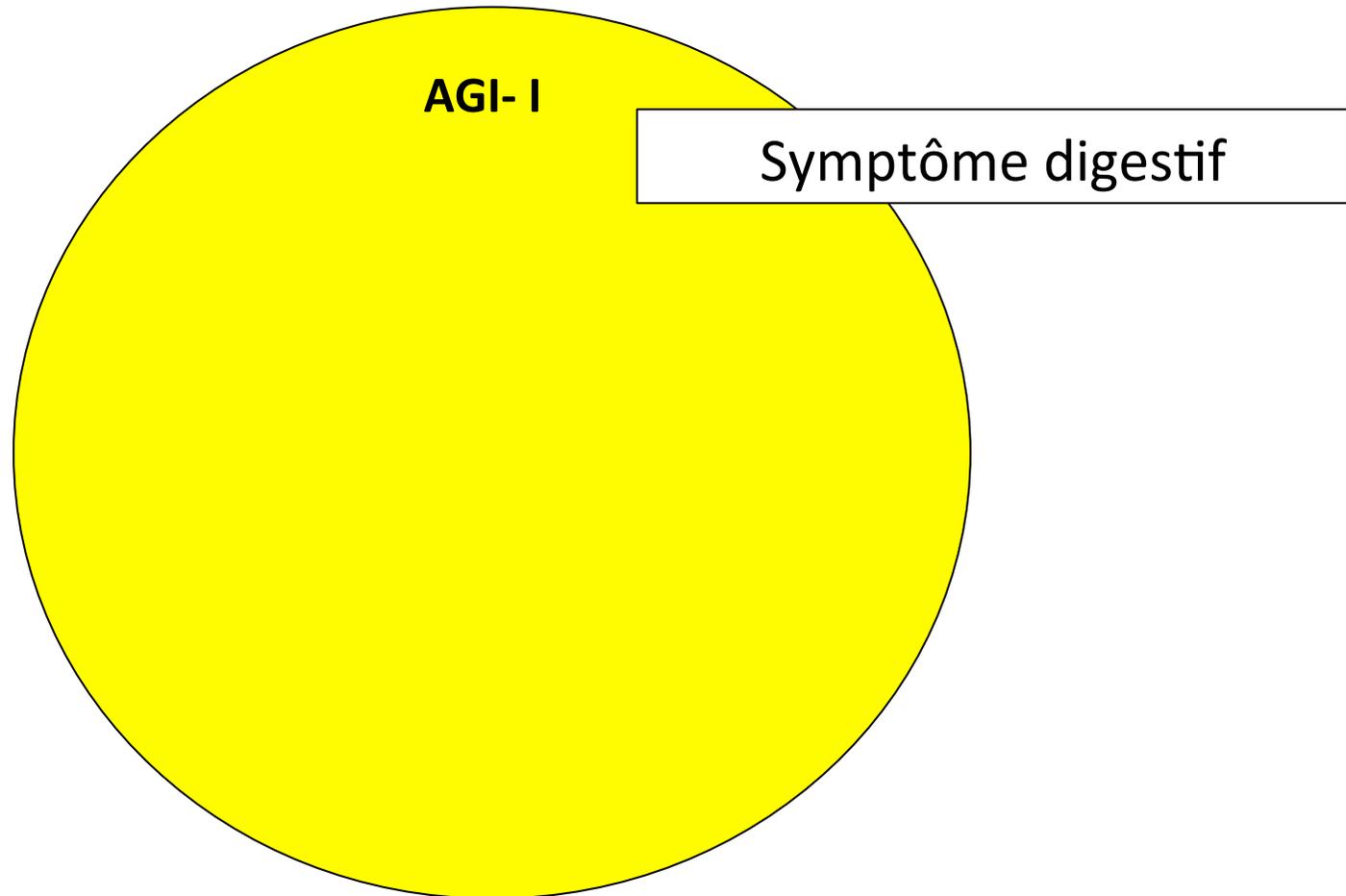
BIO

SCANNER

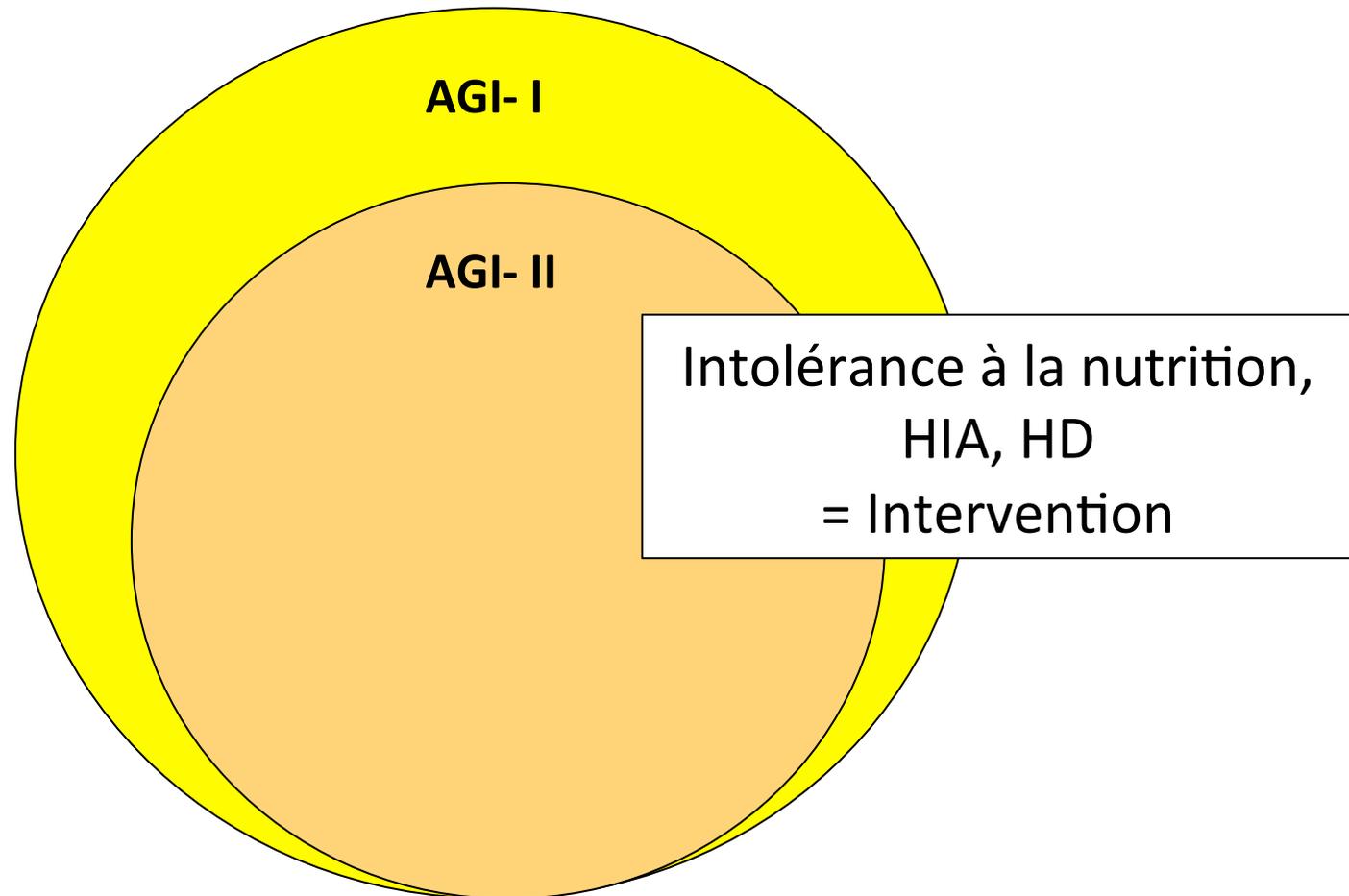
LAPARO

ENDOSCOPIE

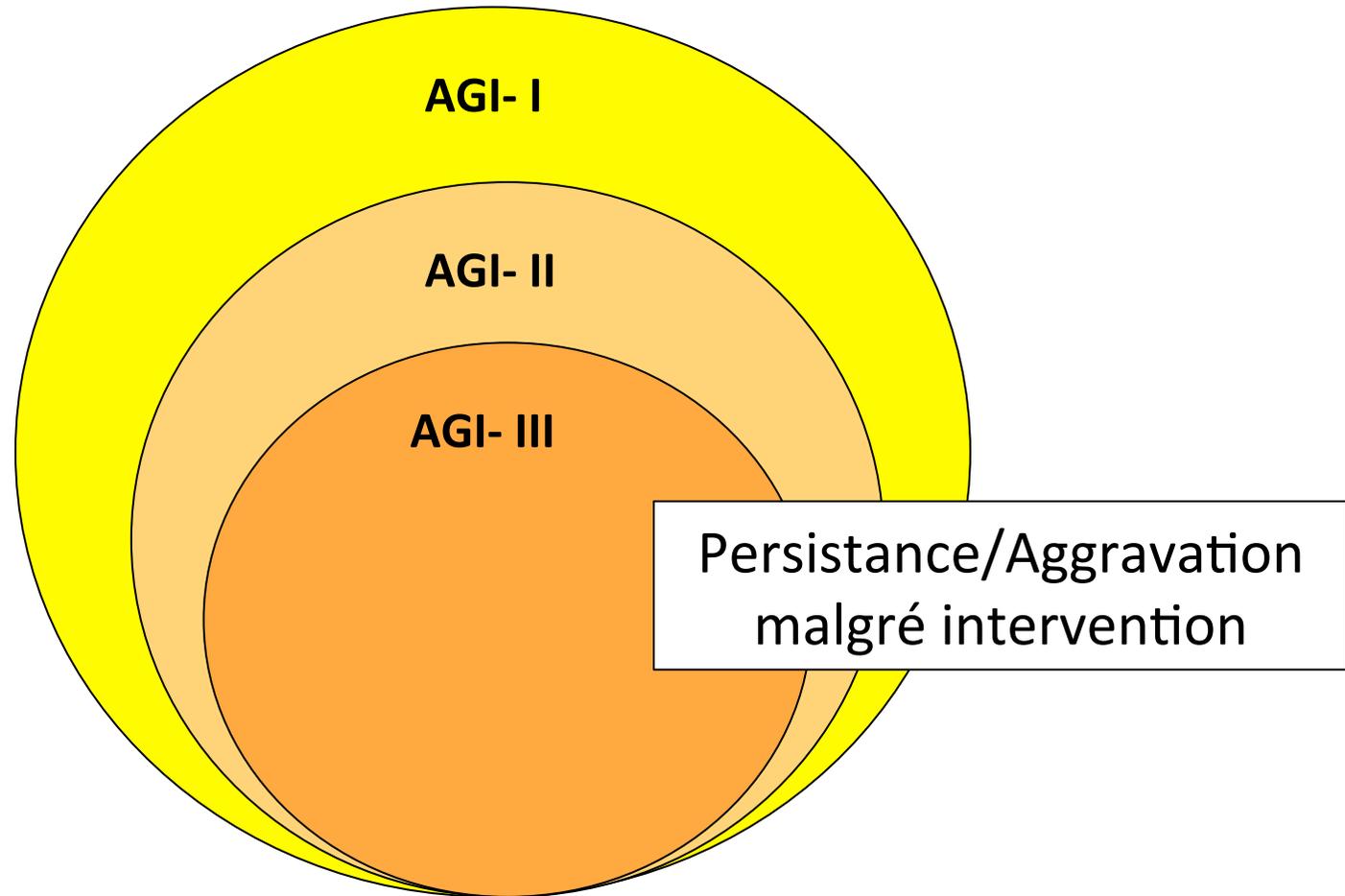
# Acute Gastrointestinal Injury



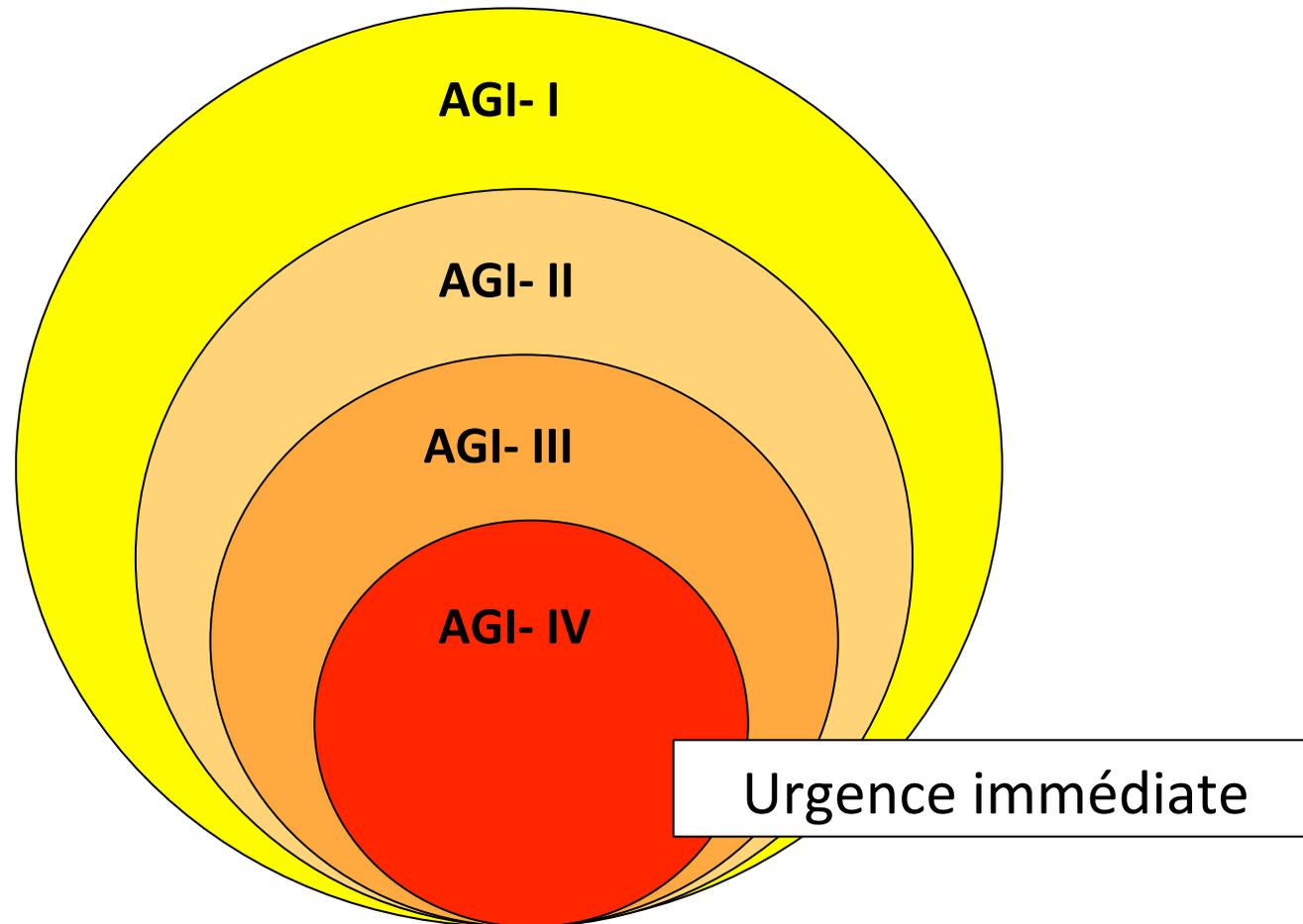
# Acute Gastrointestinal Injury



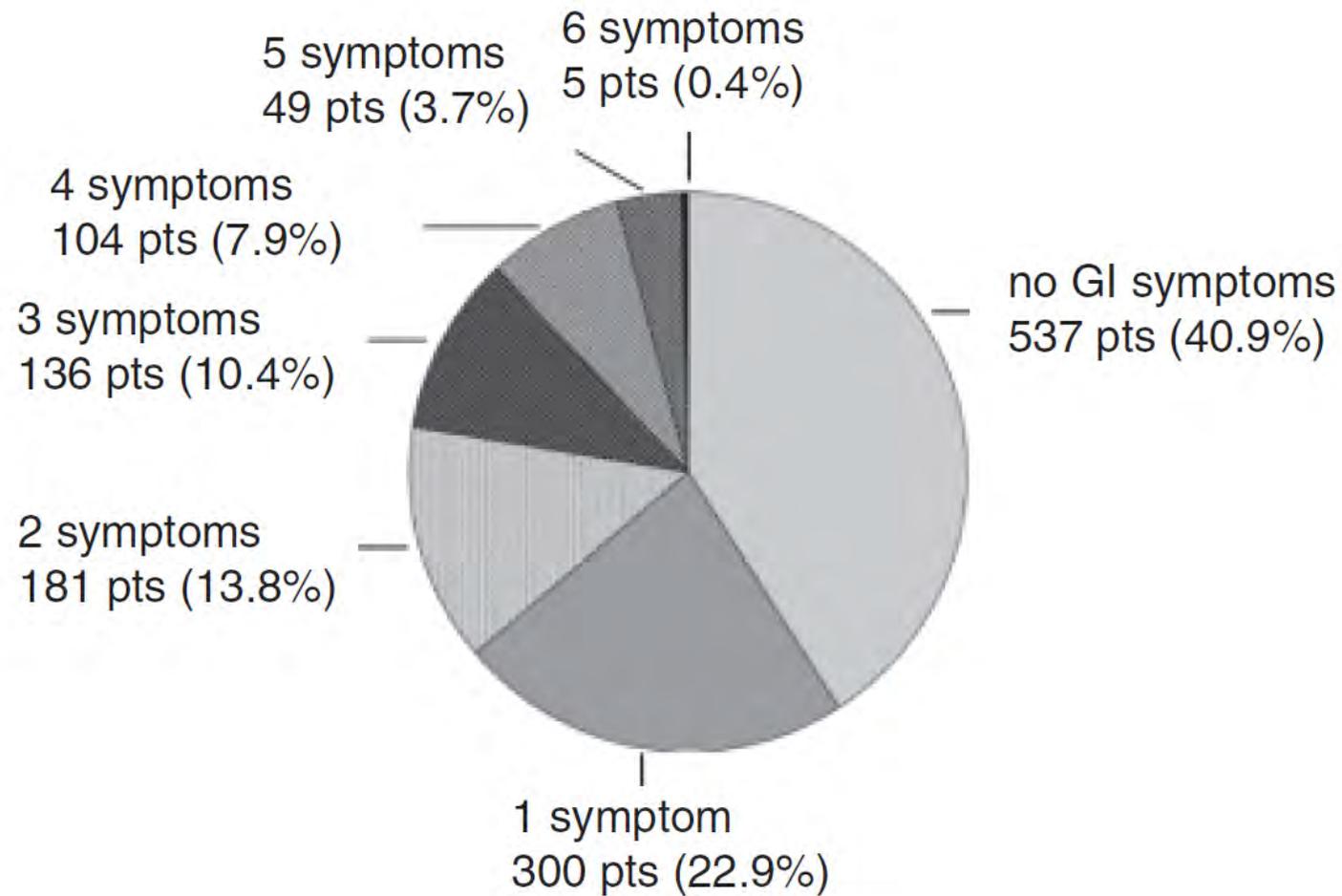
# Acute Gastrointestinal Injury



# Acute Gastrointestinal Injury



# Fréquence des symptômes gastrointestinaux



## Symptômes digestifs et mortalité en réa

---

Mean SOFA during the ICU stay and GI symptoms in prediction of mortality.

---

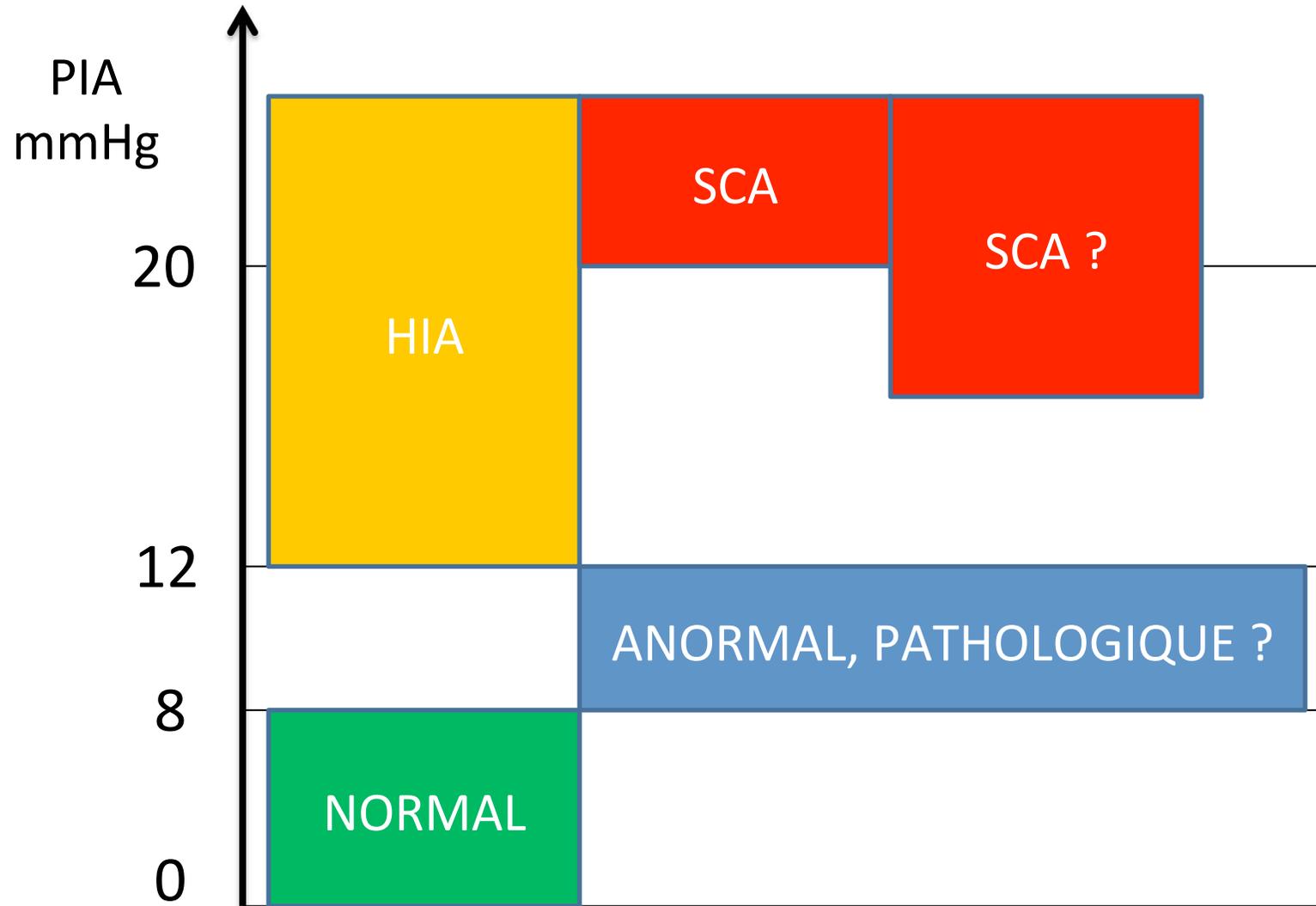
	<i>P</i> -value	OR	95% CI
Mean SOFA	< 0.001	1.49	1.41–1.56
Absent/abnormal bowel sounds	< 0.001	3.16	2.08–4.80
GI bleeding	0.016	1.94	1.13–3.32
Bowel distension	0.097	1.54	0.93–2.56

---

Quelle est la pression intra abdominale ?



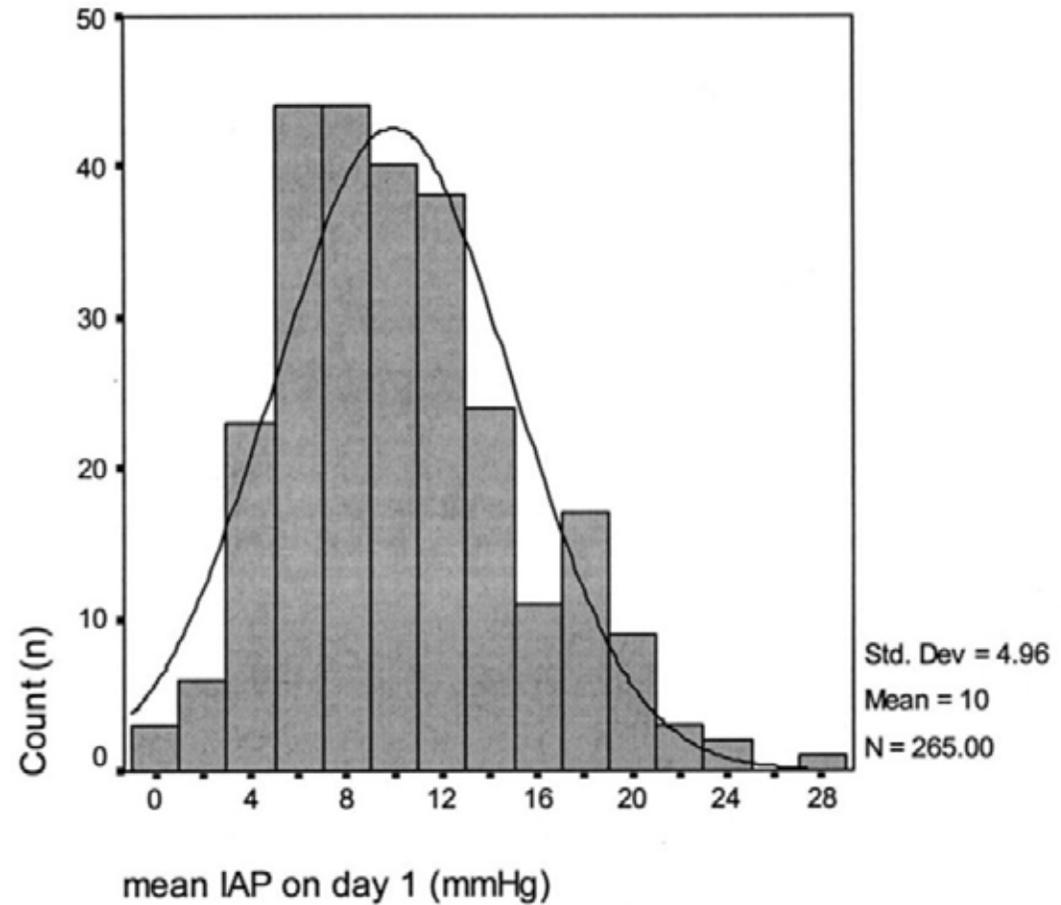
# Définition... Questions



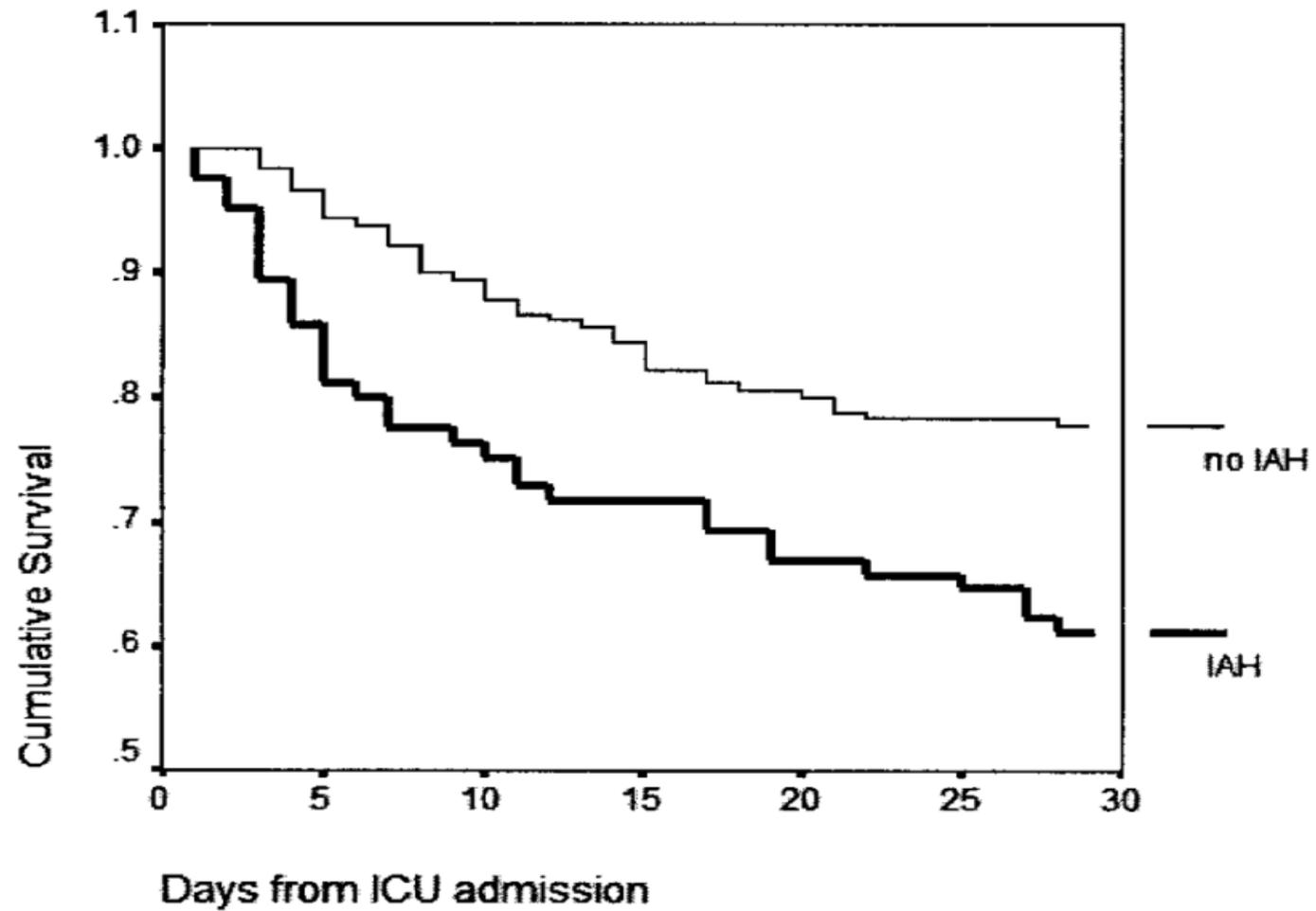
# L'hypertension intra-abdominale est fréquente

HIA: 50%

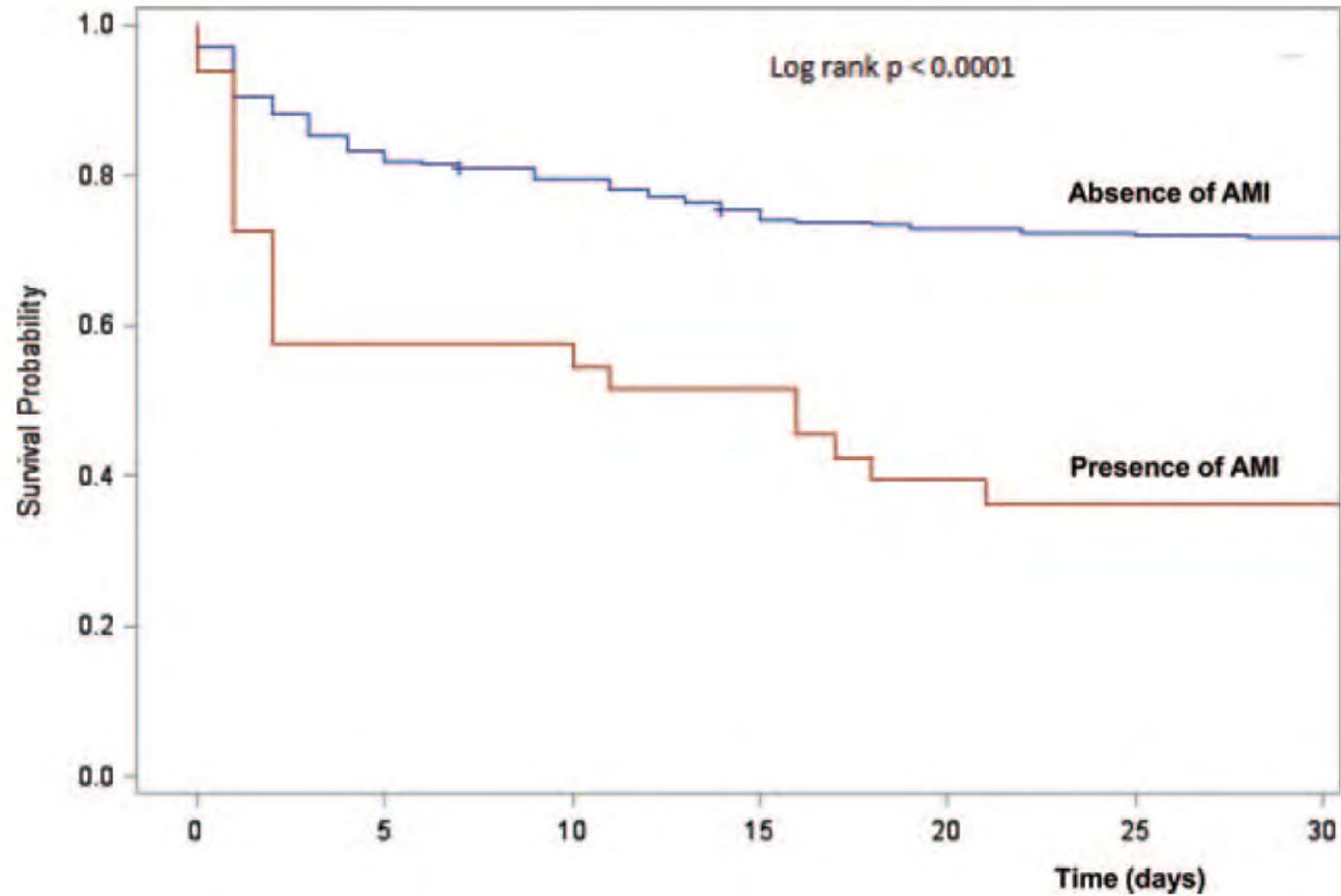
SCA: 5%



# L'hypertension intra-abdominale est grave



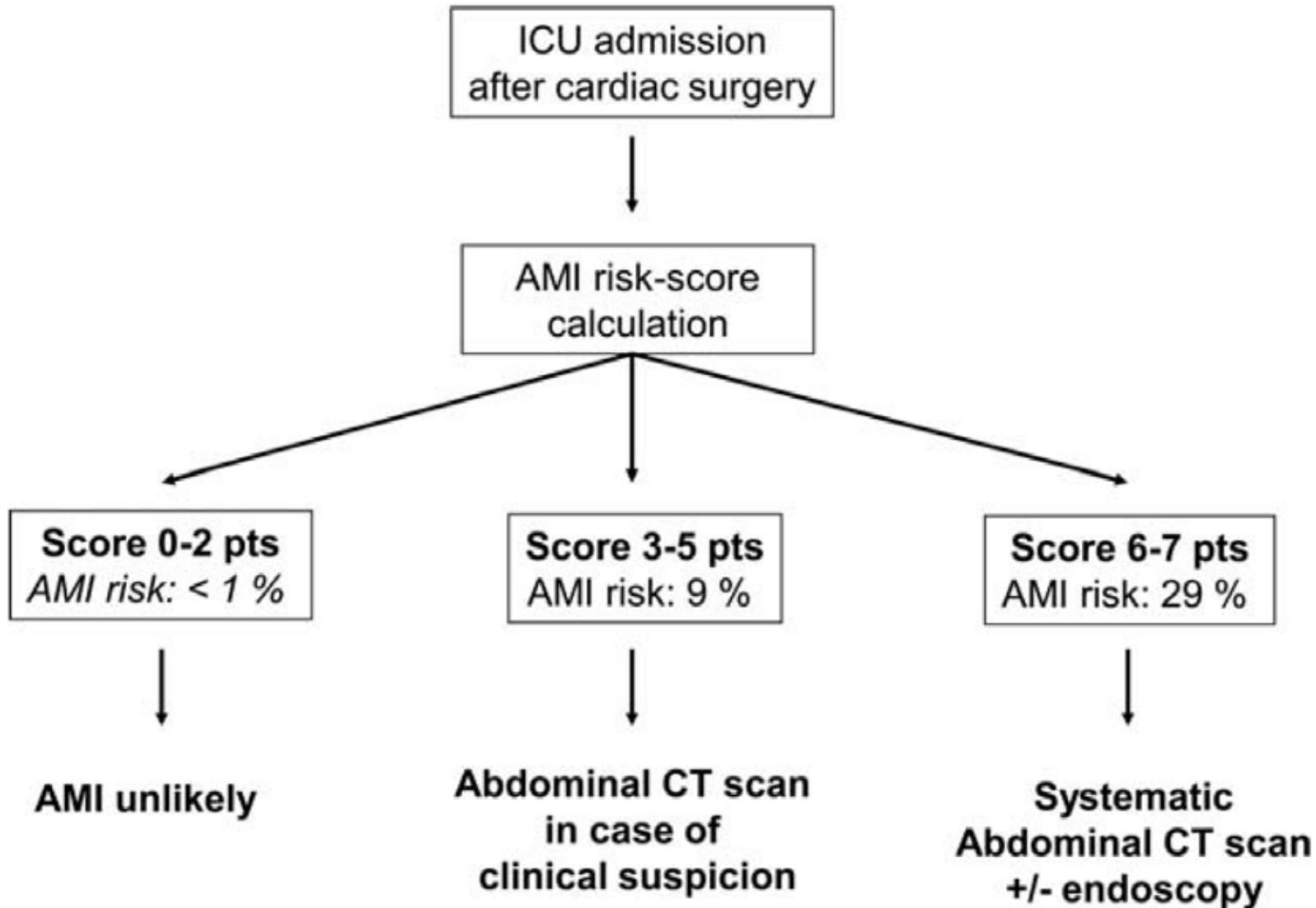
# Ischémie mésentérique aigüe après chirurgie cardiaque



## Ischémie mésentérique aiguë après chirurgie cardiaque

Variables	Multiple logistic regression	
	OR [95% CI]	<i>P</i>
SAPS II score $\geq 50$	6.2 [2.0–18.7]	0.001
ASAT $\geq 100$ UI/L	4.1 [1.5–11.4]	0.007
Blood transfusion CPB	2.3 [1.03–5.1]	0.042
CABG	2.3 [1.02–5.1]	0.045

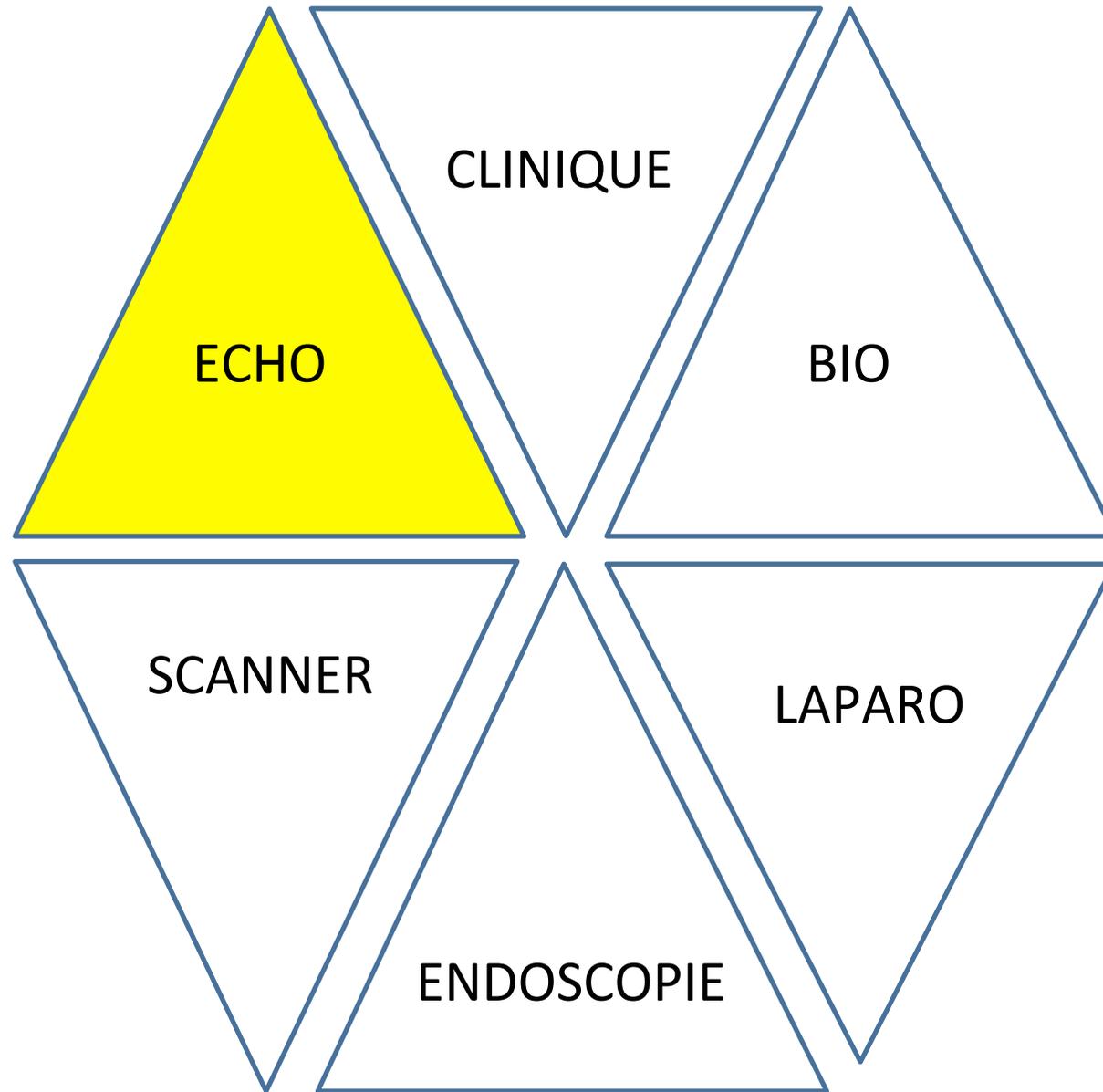
# Démarche diagnostique ?



An iceberg floating in the ocean. The tip of the iceberg is visible above the water surface, while the much larger, submerged part is visible below. The sky is blue with some clouds, and the water is a deep blue. The text 'SYMPTOMES' is written in black on the sky, and 'ATTEINTE OCCULTE' is written in white on the water.

SYMPTOMES

ATTEINTE  
OCCULTE



ECHO

CLINIQUE

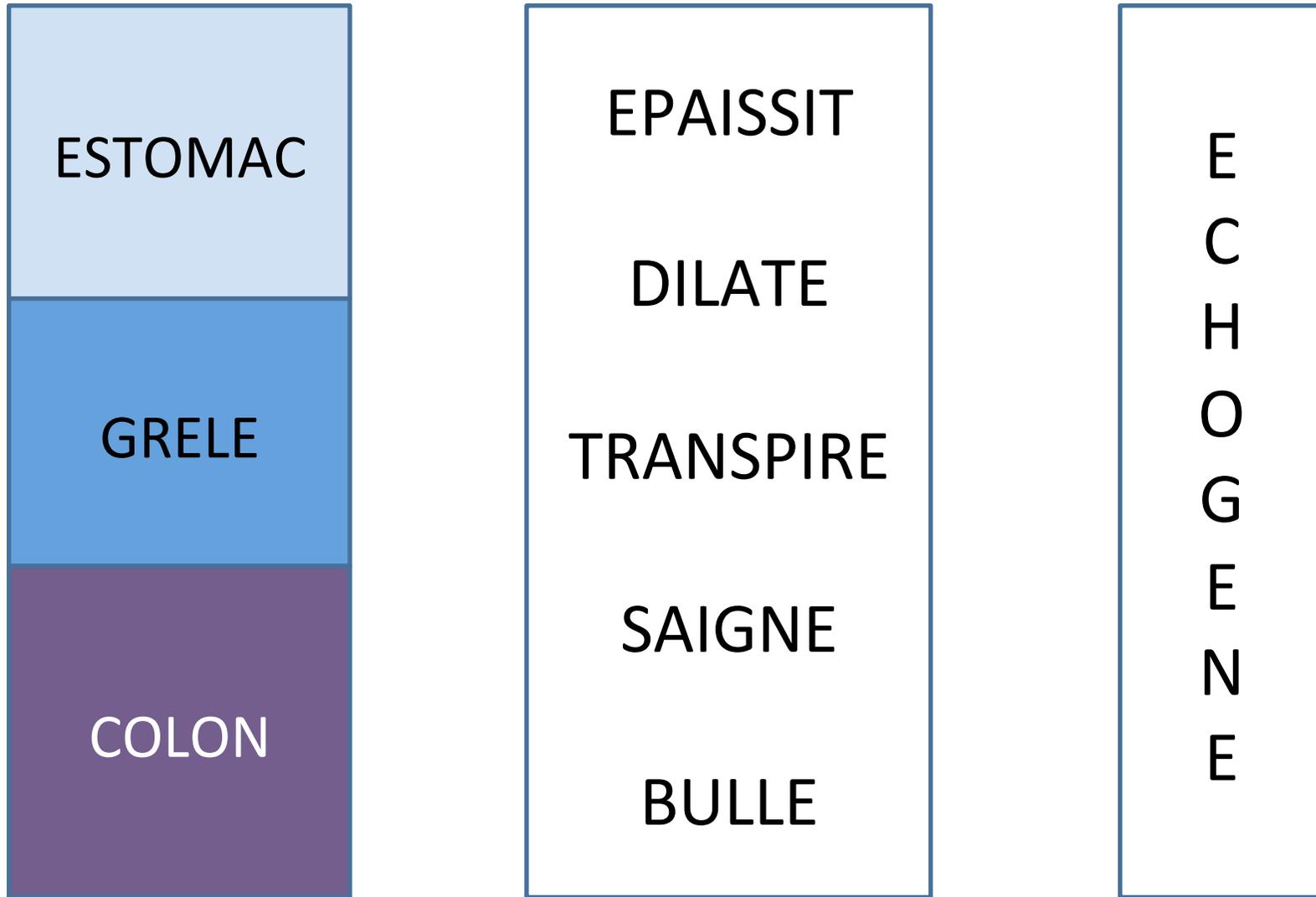
BIO

SCANNER

LAPARO

ENDOSCOPIE

# Echographie du tube digestif



2D G50/DR111/MI6/P90/Frq Gén./16.0cm



SAMSUNG  
HS70A



7  
14

# Hémorragie digestive haute



2D G50/DR111/MI6/P90/Frq Gén./13.0cm



SAMSUNG  
HS70A



5

10

# Ischémie du grêle



2D G50/DR111/MI6/P90/Frq Gén./12.0cm



SAMSUNG  
HS70A



5

10

# Hypertension portale (grêle)



2D G50/DR111/M16/P90/Frq Gén./10.0cm



SAMSUNG  
HS70A



# Hypertension portale (colon)



2D G50/DR111/MI6/P90/Frq Gén./8.0cm



SAMSUNG  
HS70A

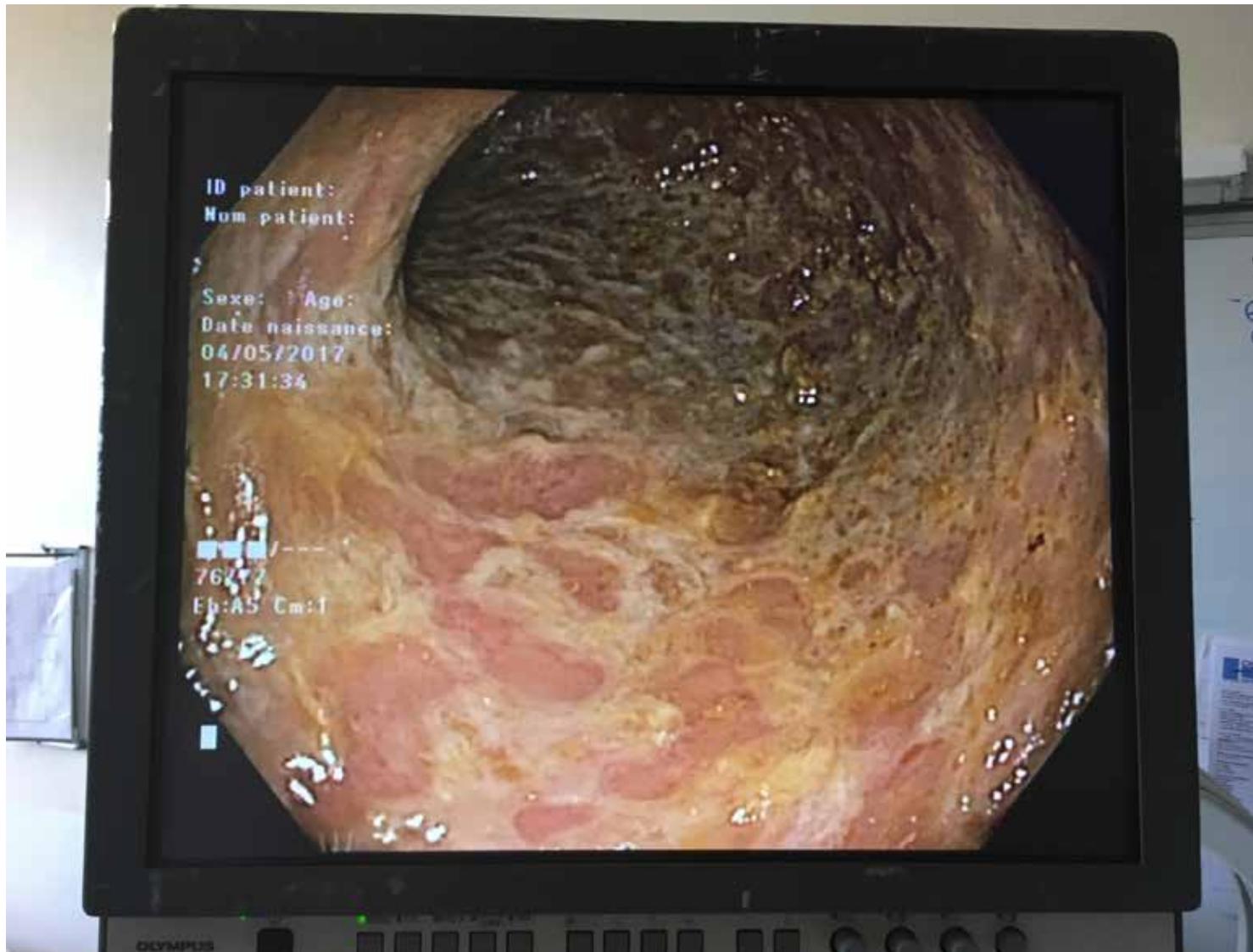


4

# Colite infectieuse



# Colite infectieuse



2D G80/DR111/MI6/P90/Frq Gén./8.0cm



SAMSUNG  
HS70A



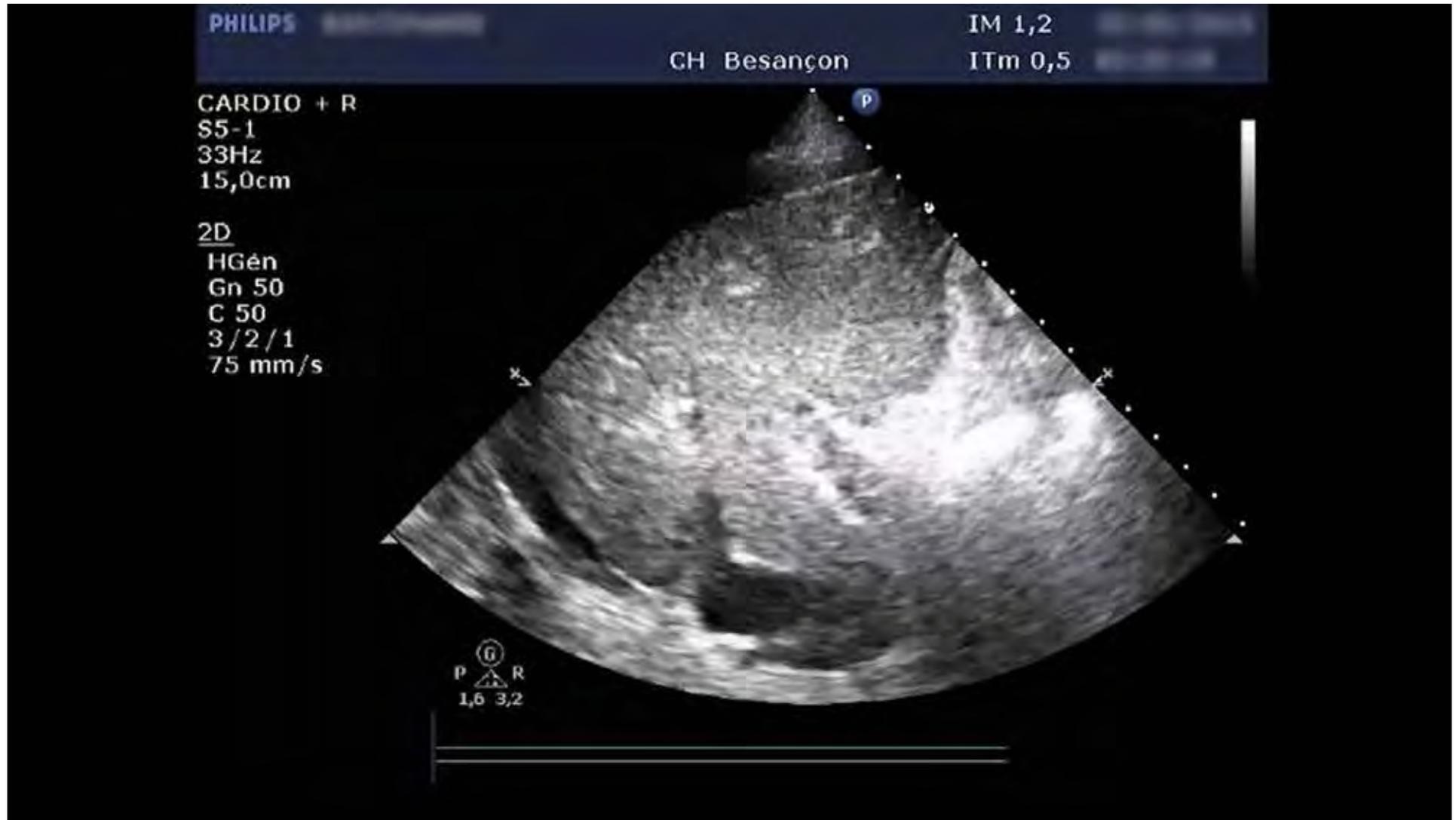
4

# Colite de GVH





# Aéroportie



2D G58/DR111/MI6/P90/Frq Gén./12.0cm



SAMSUNG  
HS70A



5

10

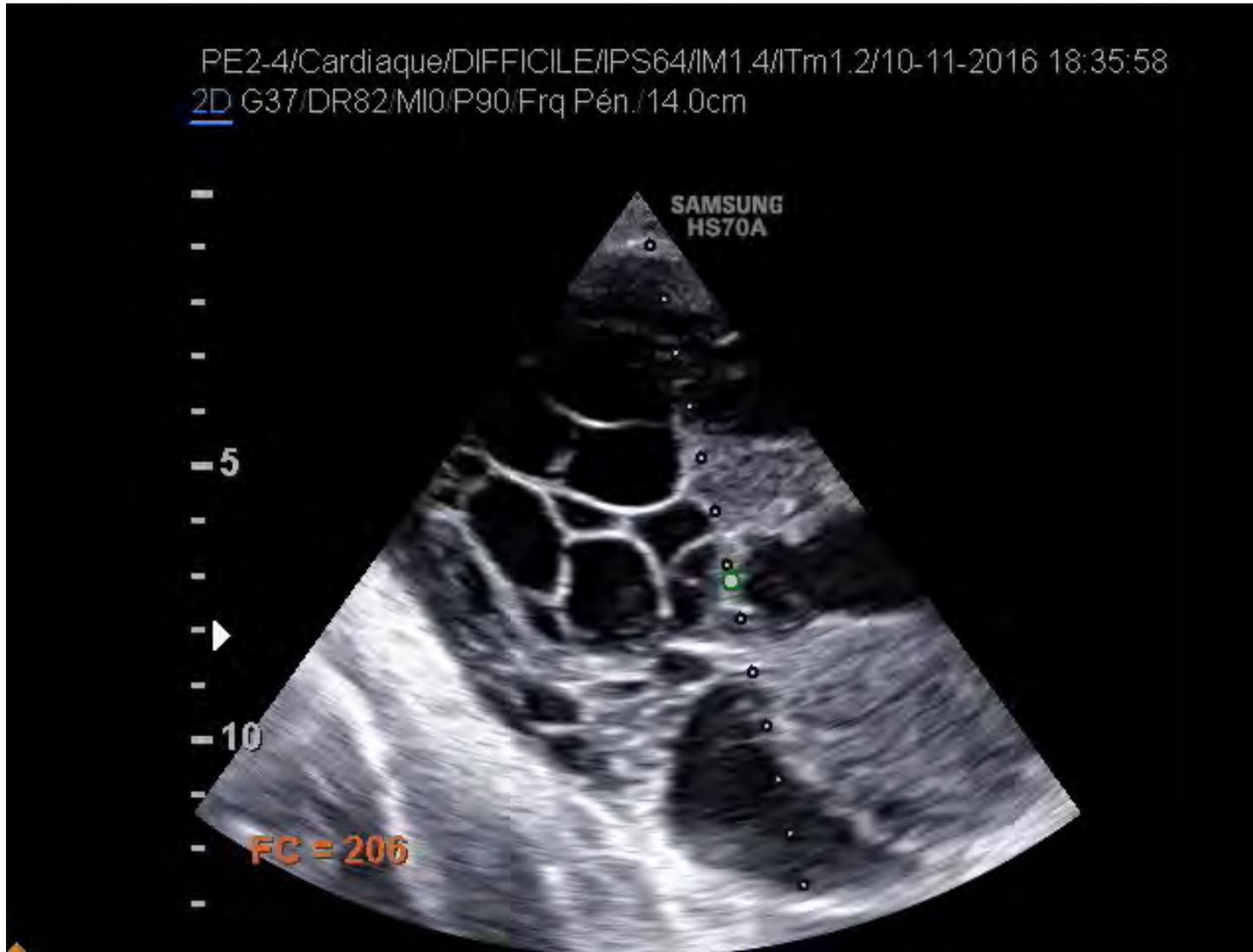
# Ascite infectée



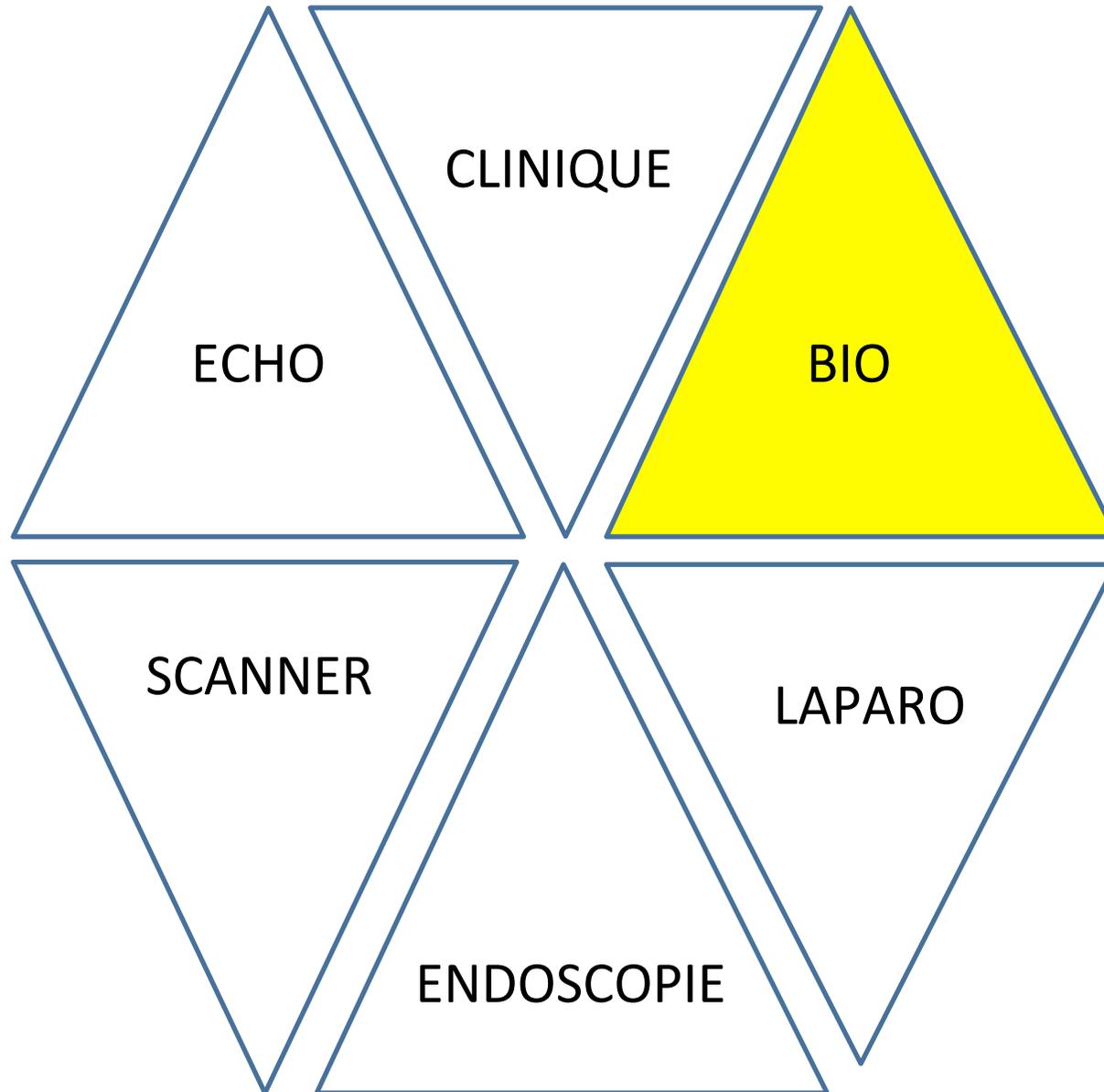
PE2-4/Cardiaque/DIFFICILE/IPS64/IM1.4/ITm1.2/10-11-2016 18:35:58  
2D G37/DR82/M10/P90/Frq Pén./14.0cm



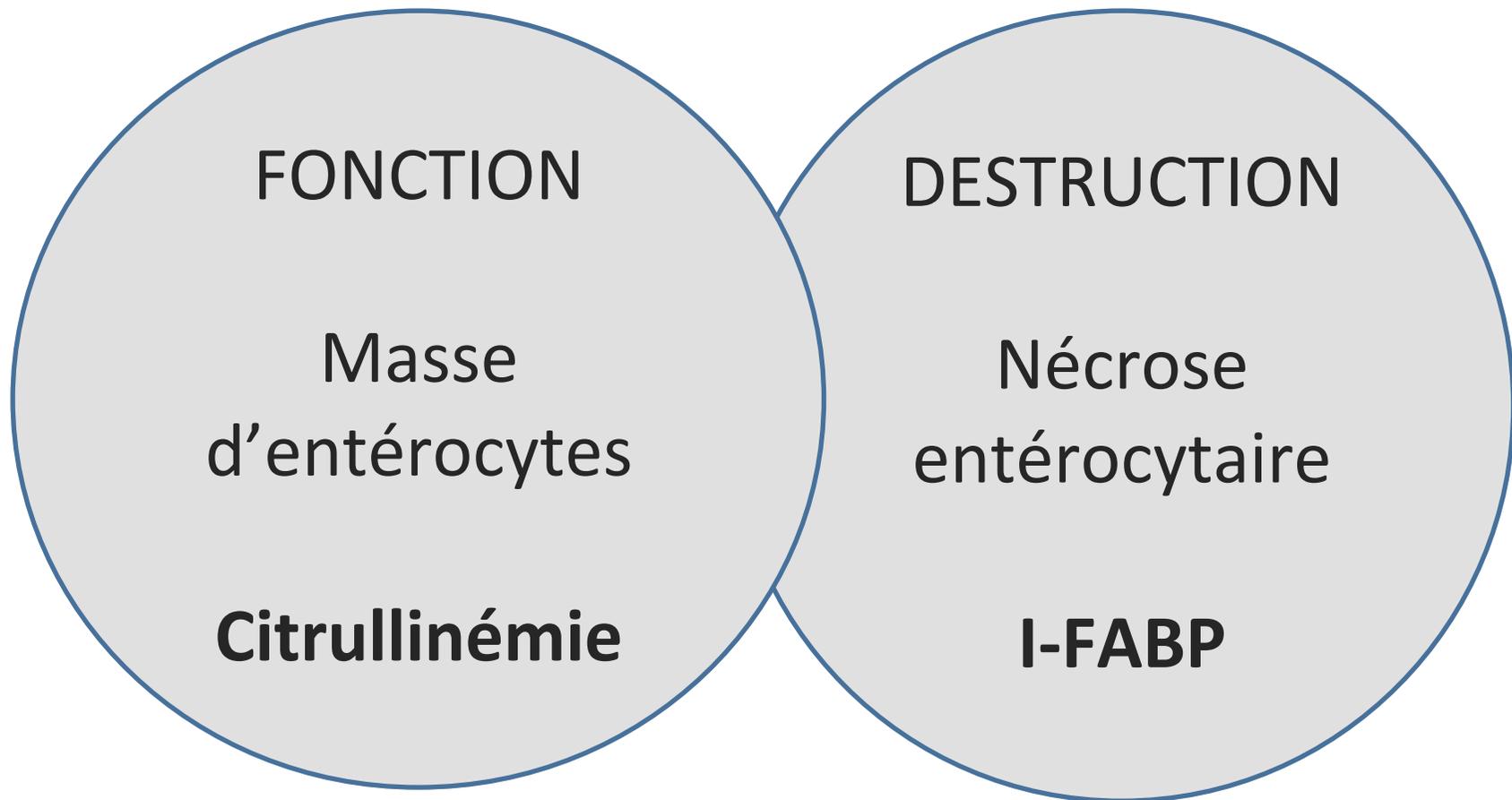
# Péritonite bactérienne

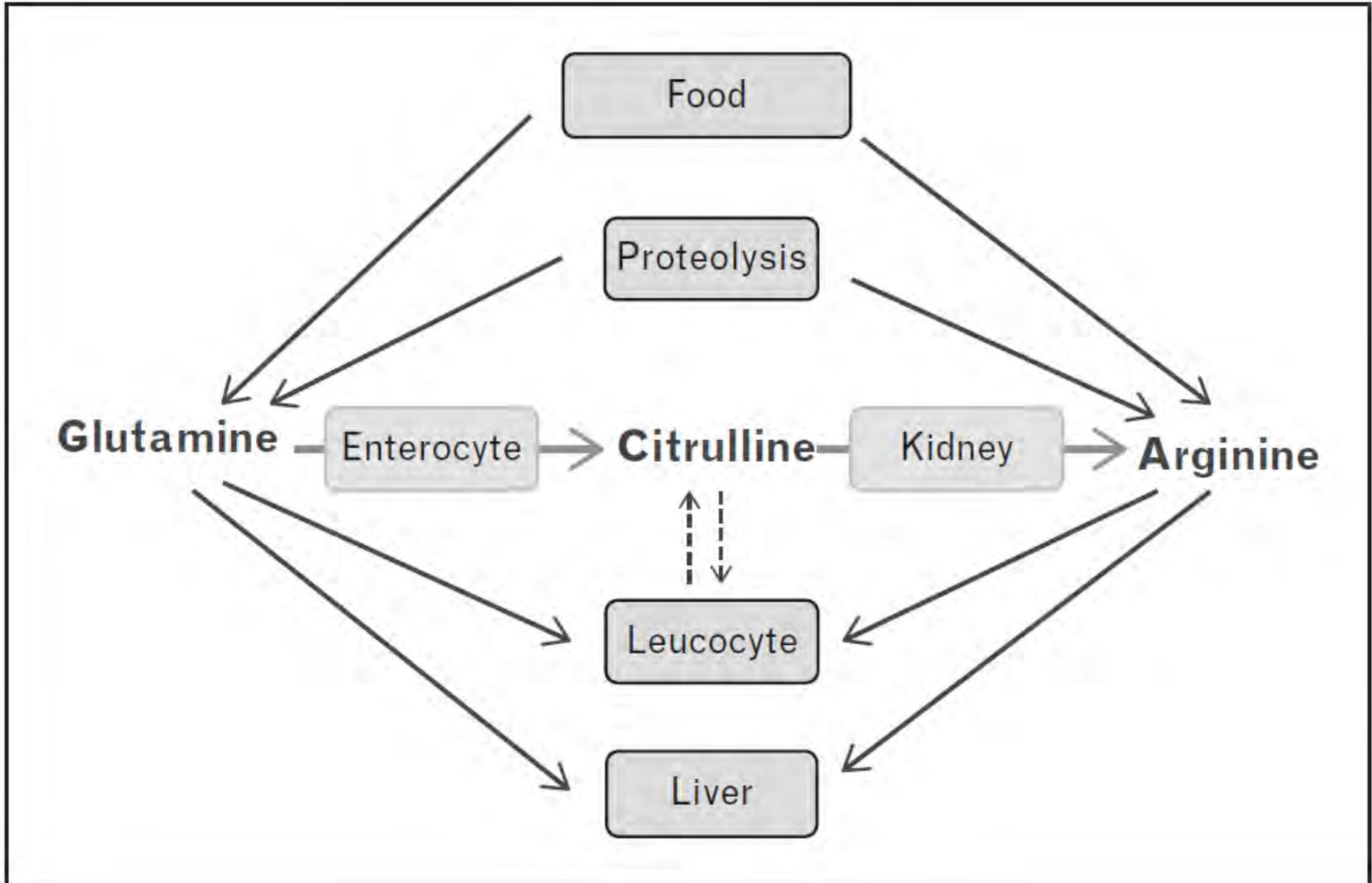


# Puzzle diagnostic

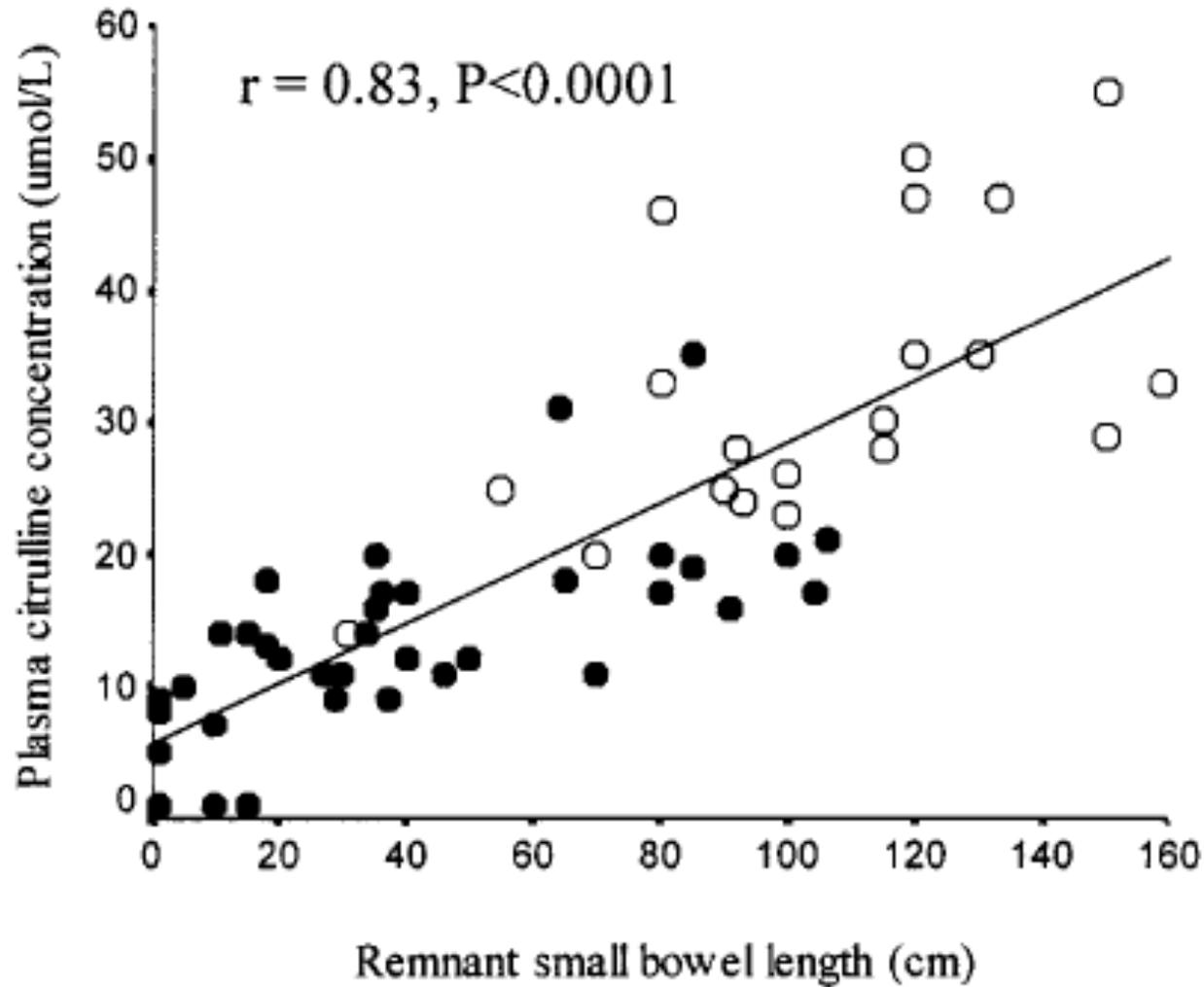


# Biomarqueurs entérocytaires

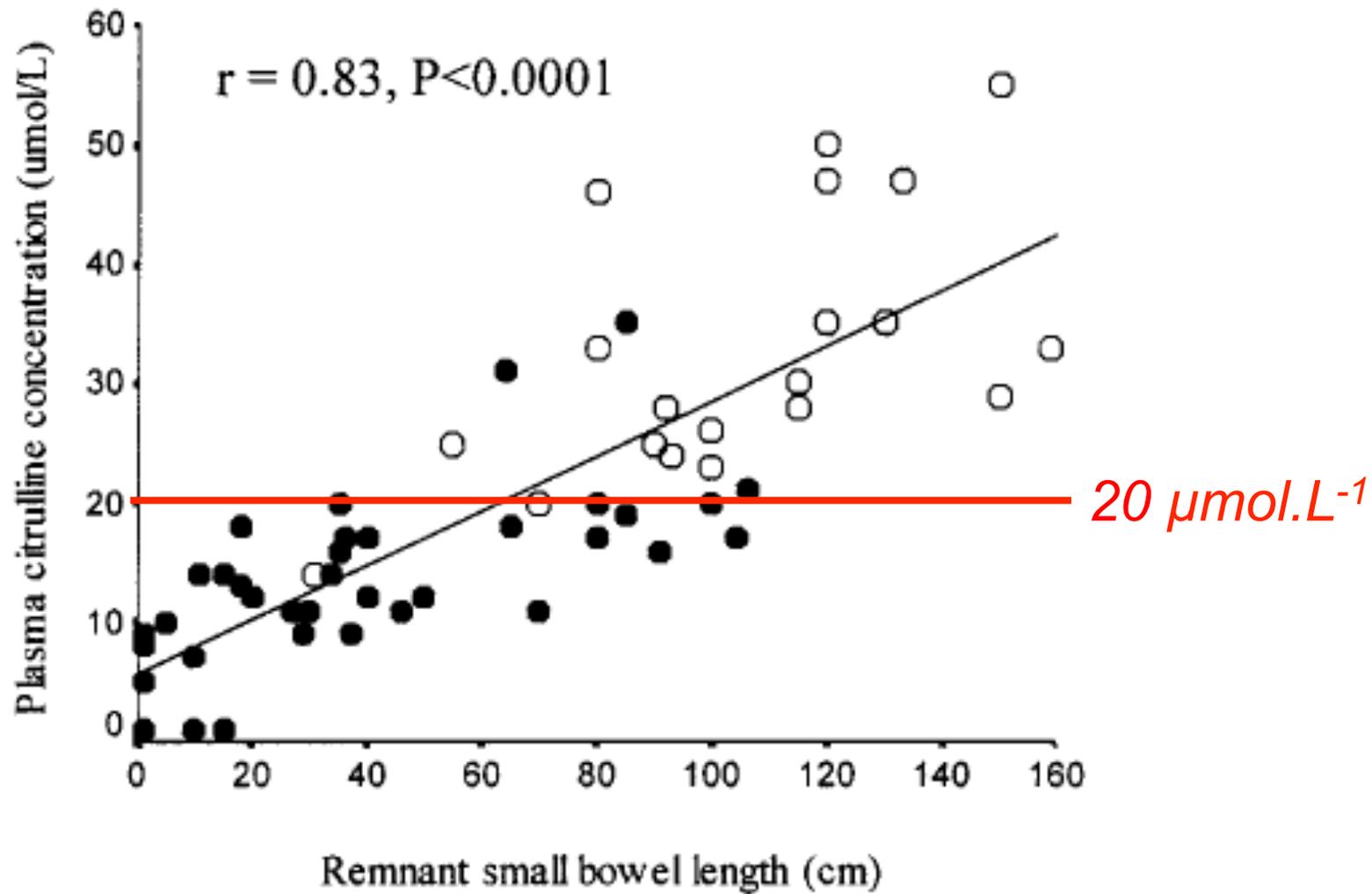




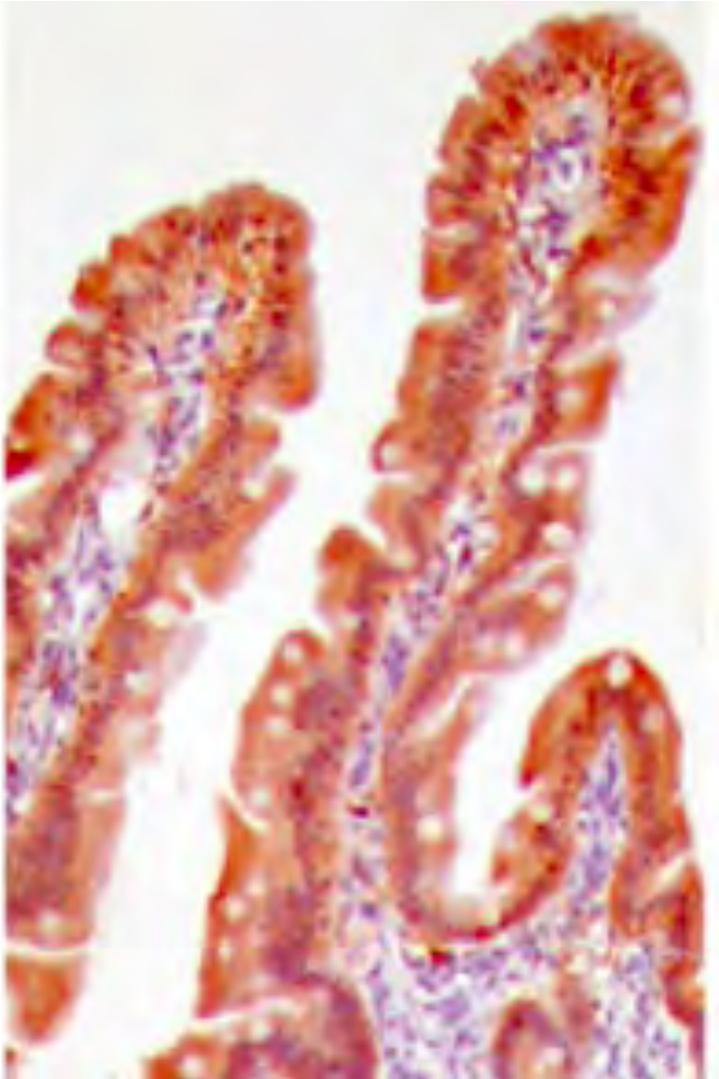
# Citrullinémie et grêle court



# Citrullinémie et grêle court



# L'I-FABP (Intestinal fatty acid-binding protein)



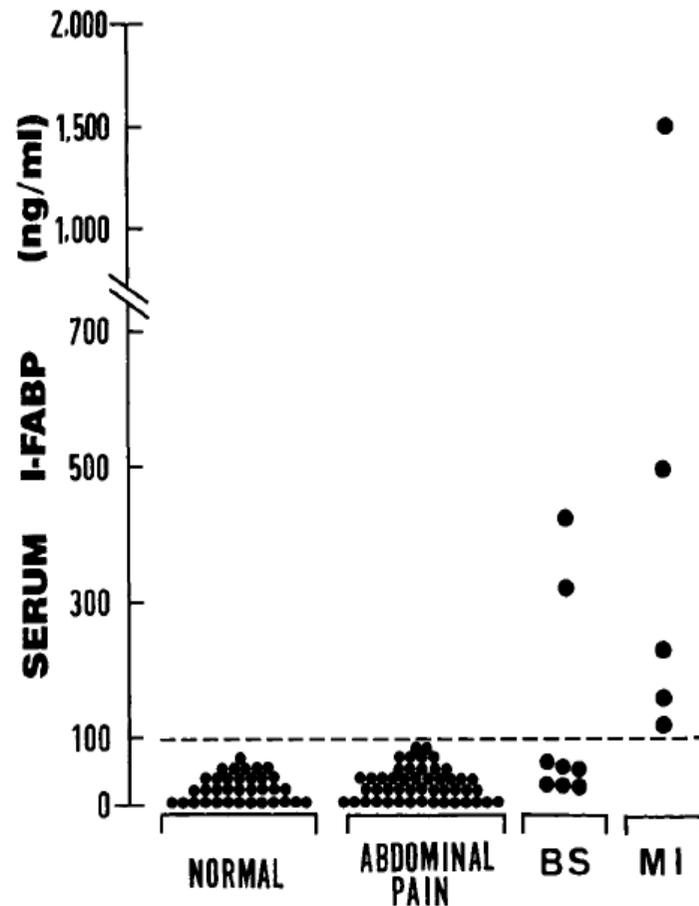
**IFABP** dans le cytosol  
des **entérocytes du grêle**

« la transaminase du grêle »

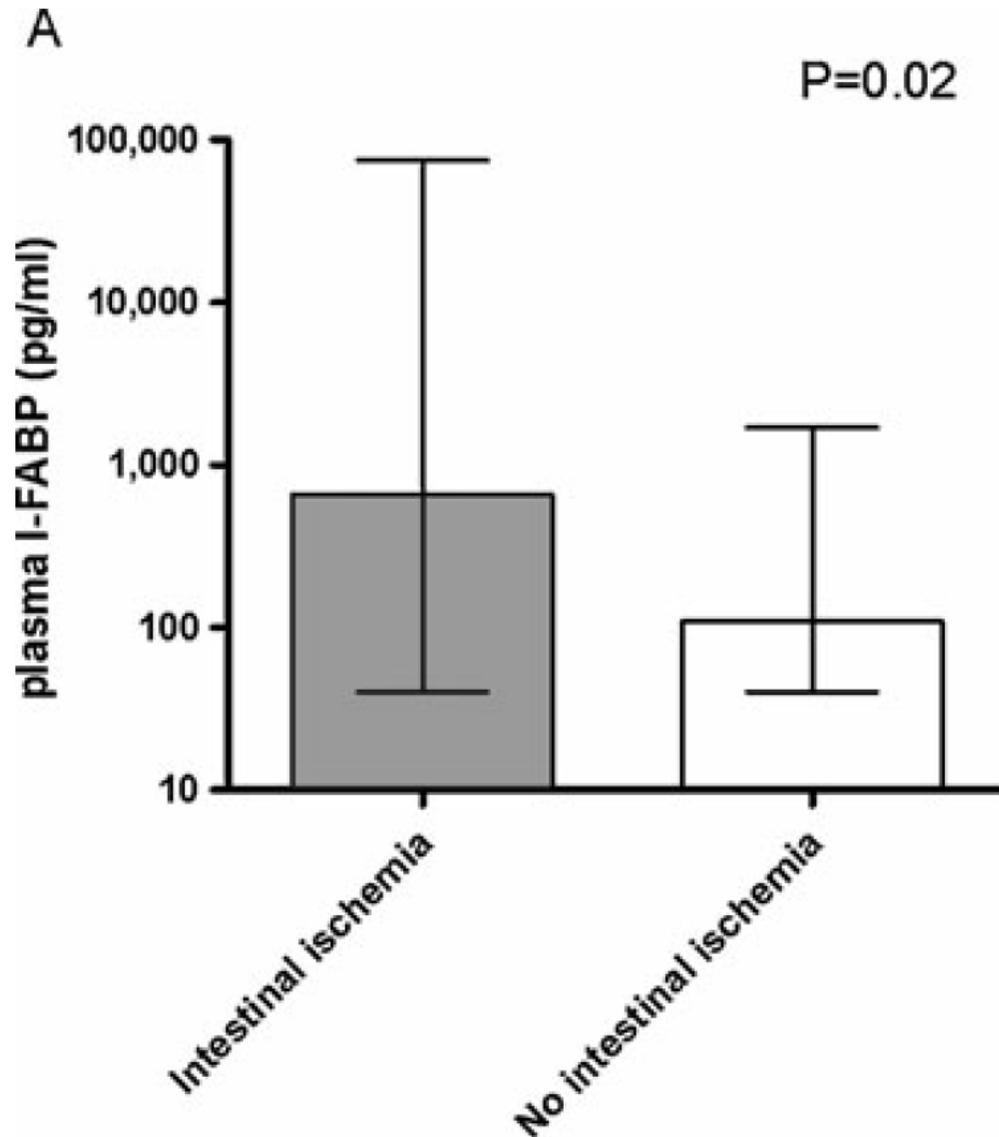
# Intestinal Fatty Acid–Binding Protein Is a Useful Diagnostic Marker for Mesenteric Infarction in Humans

TATSUO KANDA,\* HIROSHI FUJII,† TATSUO TANI,\* HIROSHI MURAKAMI,\* TAKEYASU SUDA,\* YASUO SAKAI,\* TERUO ONO,† and KATSUYOSHI HATAKEYAMA\*

Departments of \*Surgery and †Biochemistry, Niigata University School of Medicine, Niigata, Japan



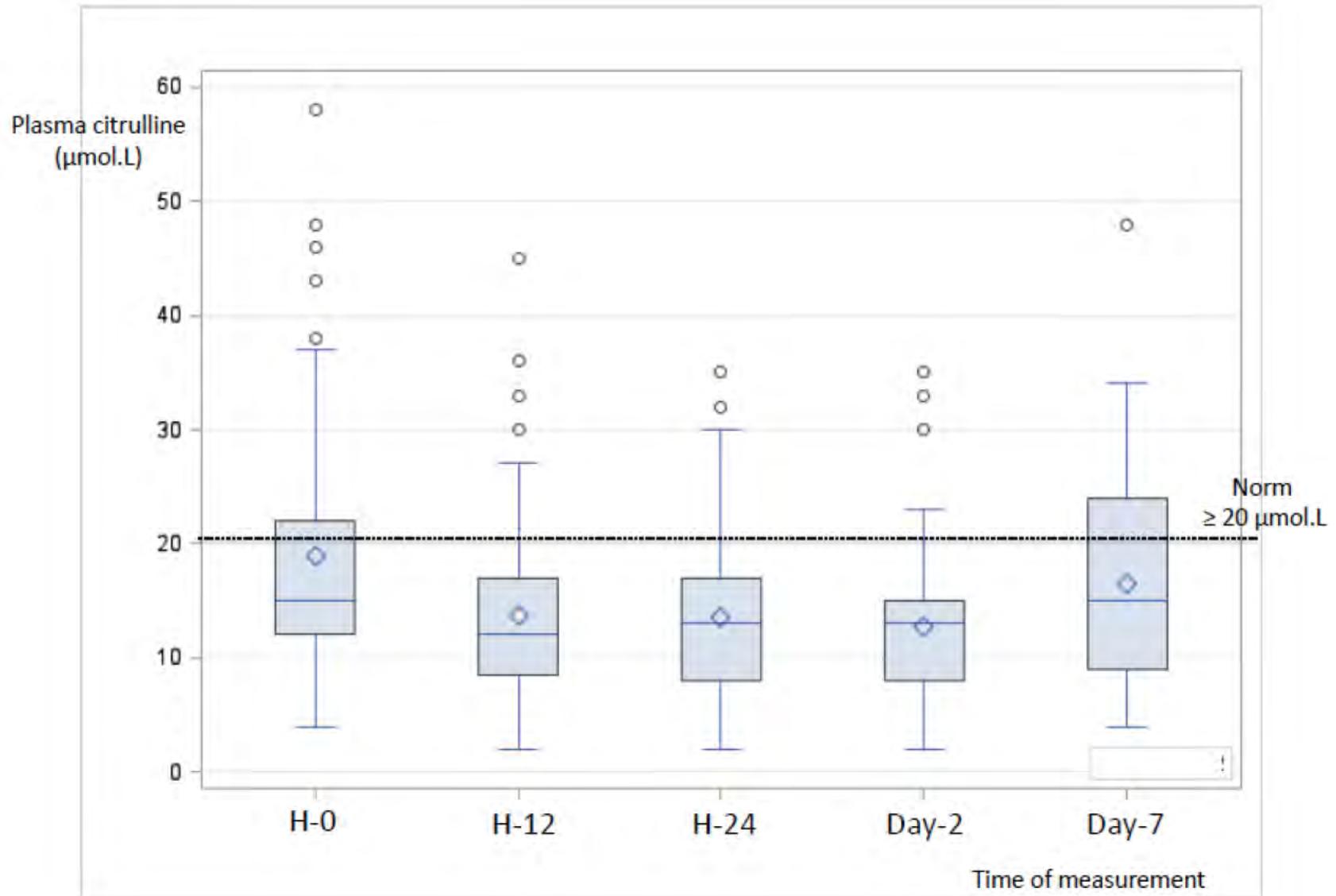
# IFABP et ischémie mésentérique aigue



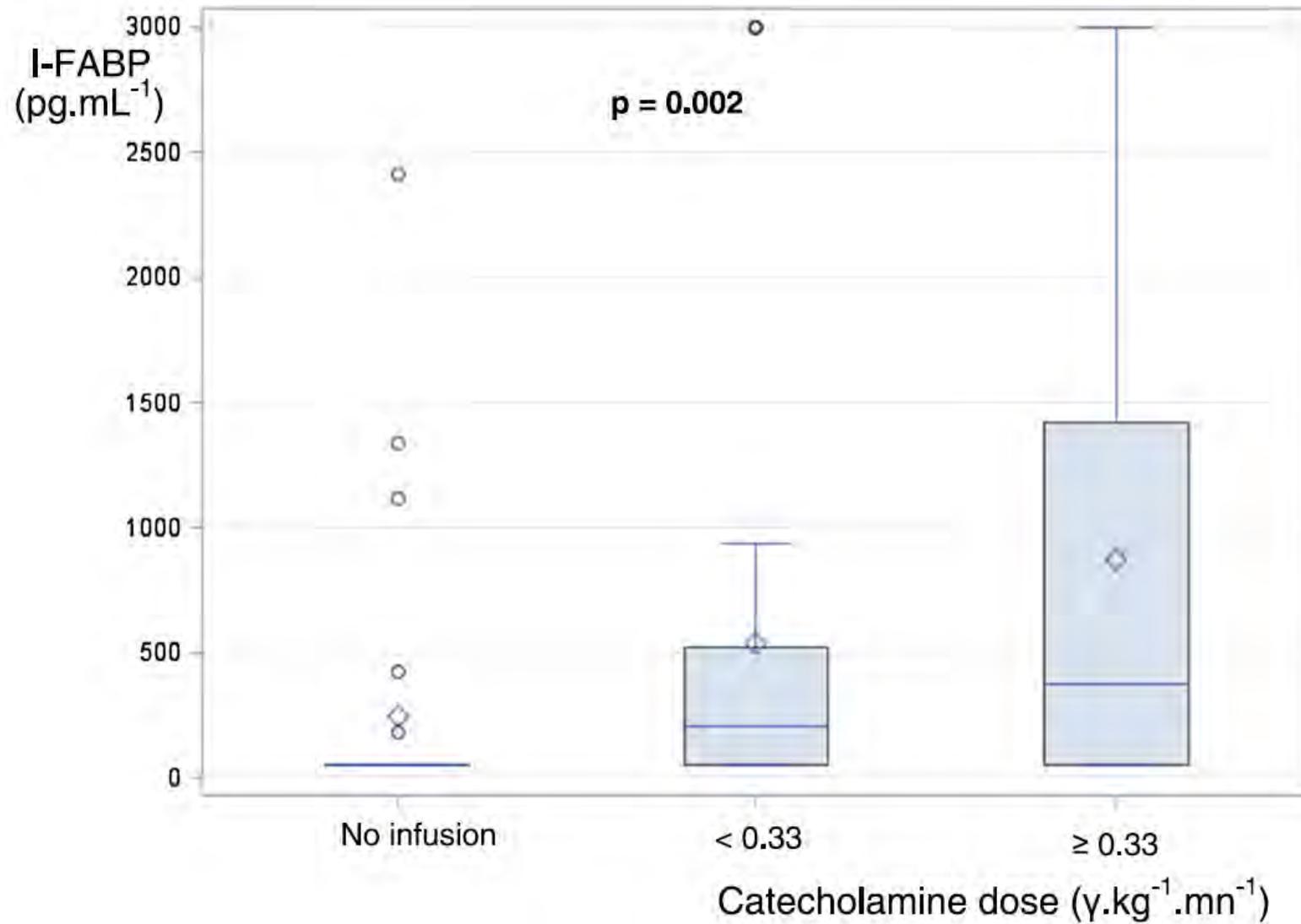
Seuil IFABP = 268 pg/ml  
Sensibilité 0,68  
Spécificité 0,71

Biomarqueurs entérocytaires  
en réa ?

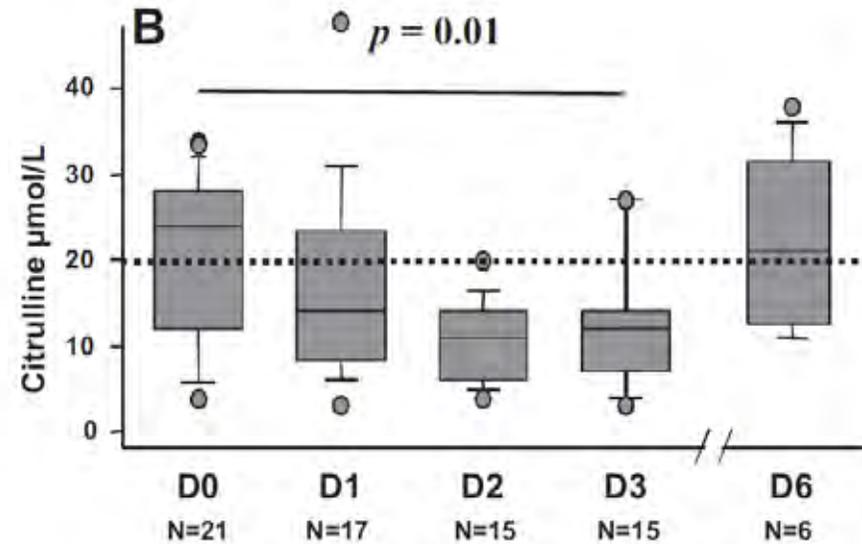
# Atteinte entérocytaire en réanimation



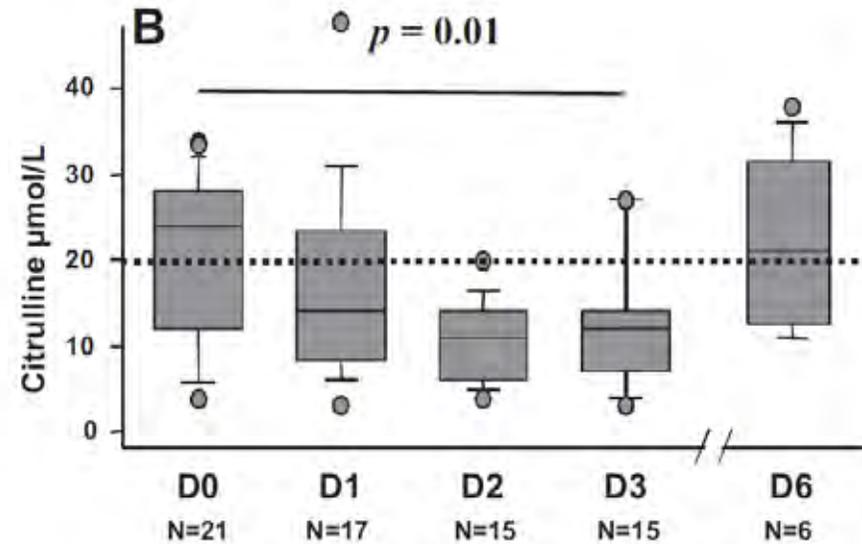
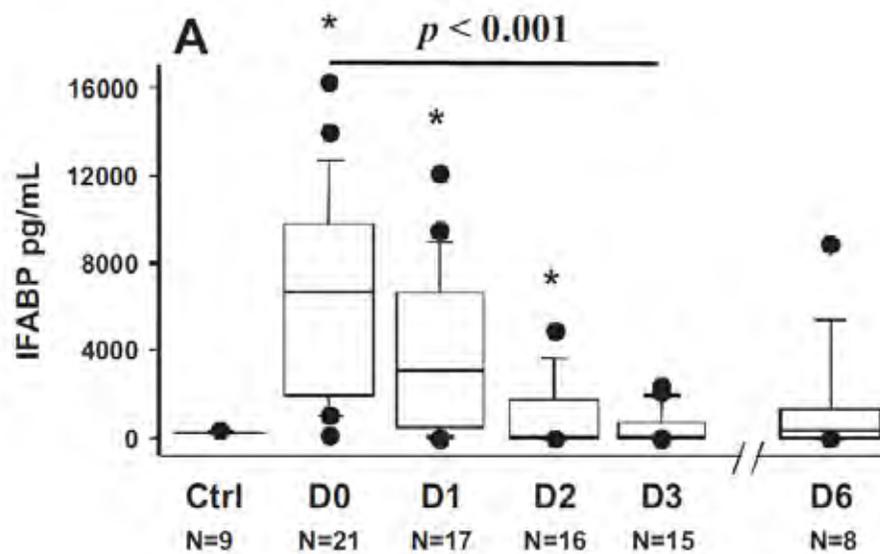
# IFABP et catécholamines



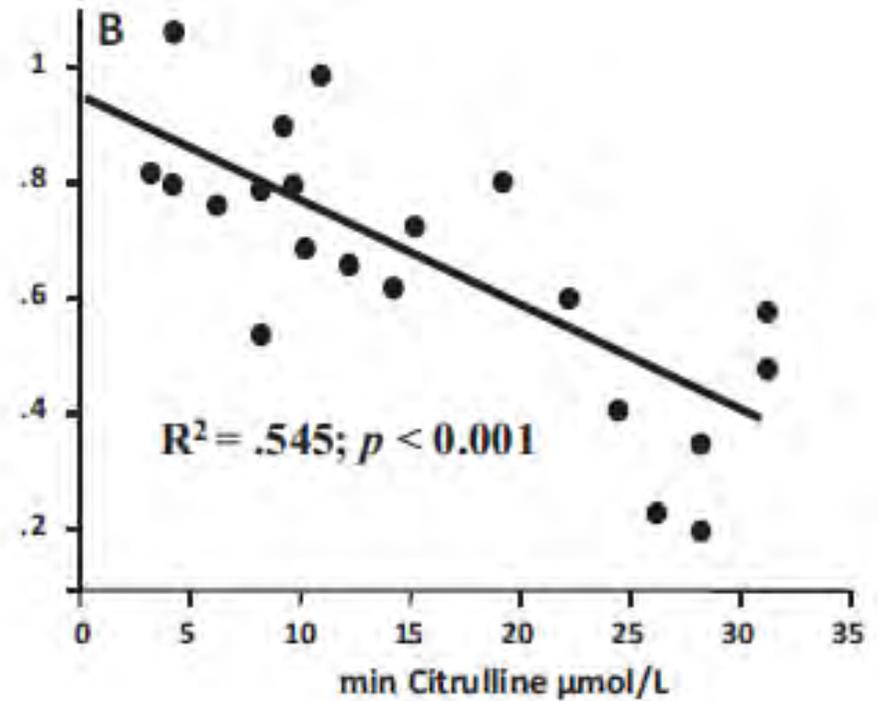
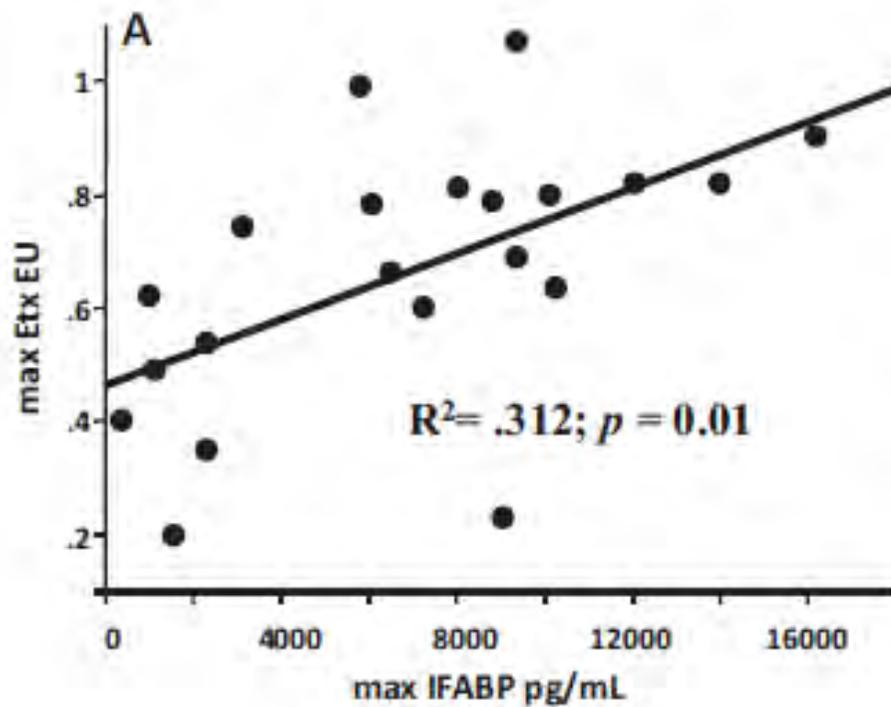
# Cinétique des biomarqueurs après un arrêt cardiaque



# Cinétique des biomarqueurs après un arrêt cardiaque



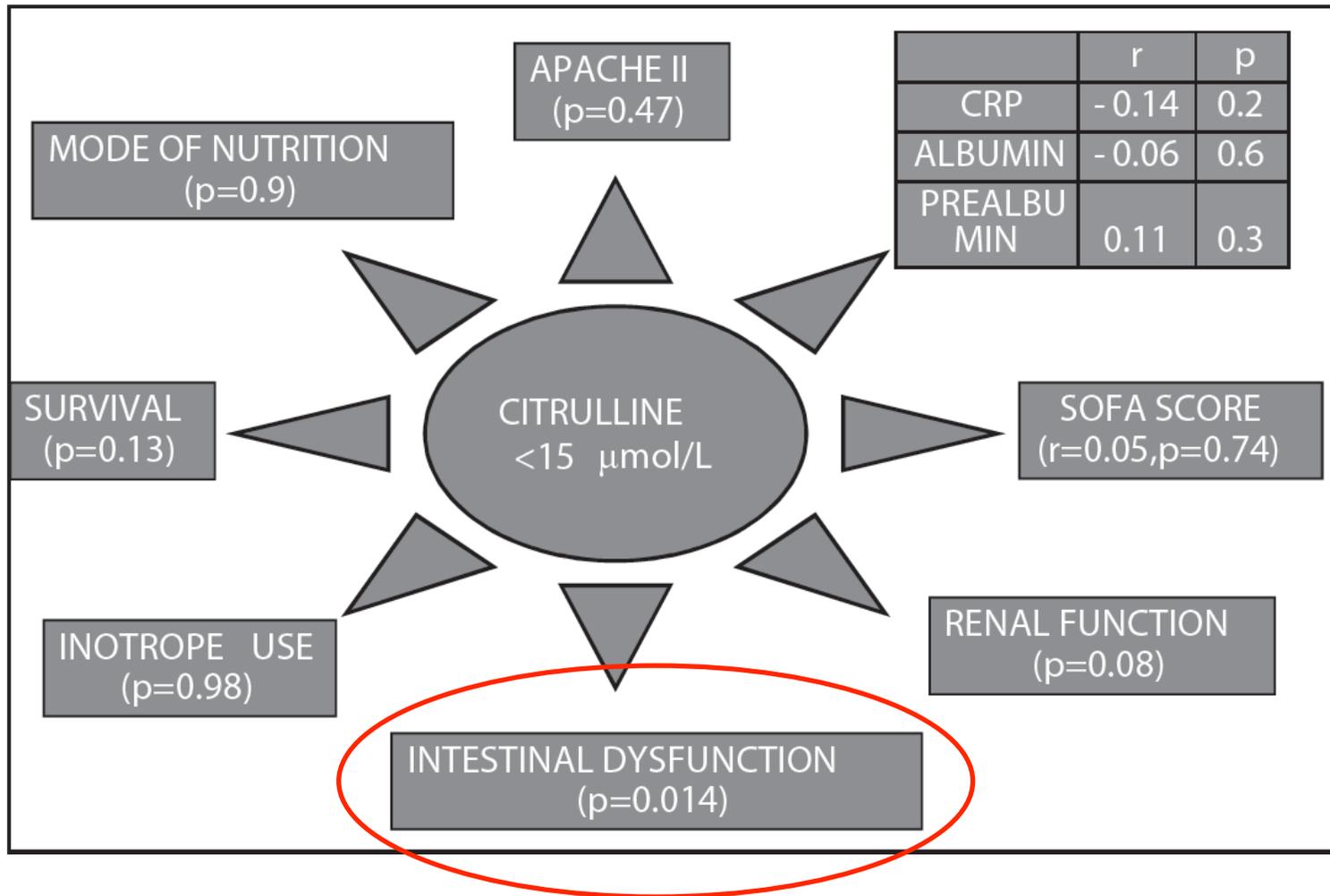
# Biomarqueurs entérocytaires et endotoxémie



# Citrullinémie et bactériémie

	Translocation (n = 12)	No translocation (n = 4)
Plasma citrulline nadir ( $\mu\text{mol/L}$ )	$13 \pm 6^*$	$29 \pm 7$
Glutamine ( $\mu\text{mol/L}$ )	$330 \pm 208$	$496 \pm 184$
Arginine ( $\mu\text{mol/L}$ )	$31 \pm 27$	$57 \pm 58$
CRP (ng/mL)	$189 \pm 129$	$110 \pm 103$
TNF- $\alpha$ (pg/mL)	42 (3-1100)	28 (21-69)
IL-10 (pg/mL)	16 (4-718)	56 (4-311)
TNF- $\alpha$ /IL-10	1.7 (0.29-275)	0.38 (0.22-15)
Albumin (g/L)	$19 \pm 8$	$16 \pm 2$
Transthyretin (g/L)	$0.11 \pm 10$	$0.05 \pm 0.01$

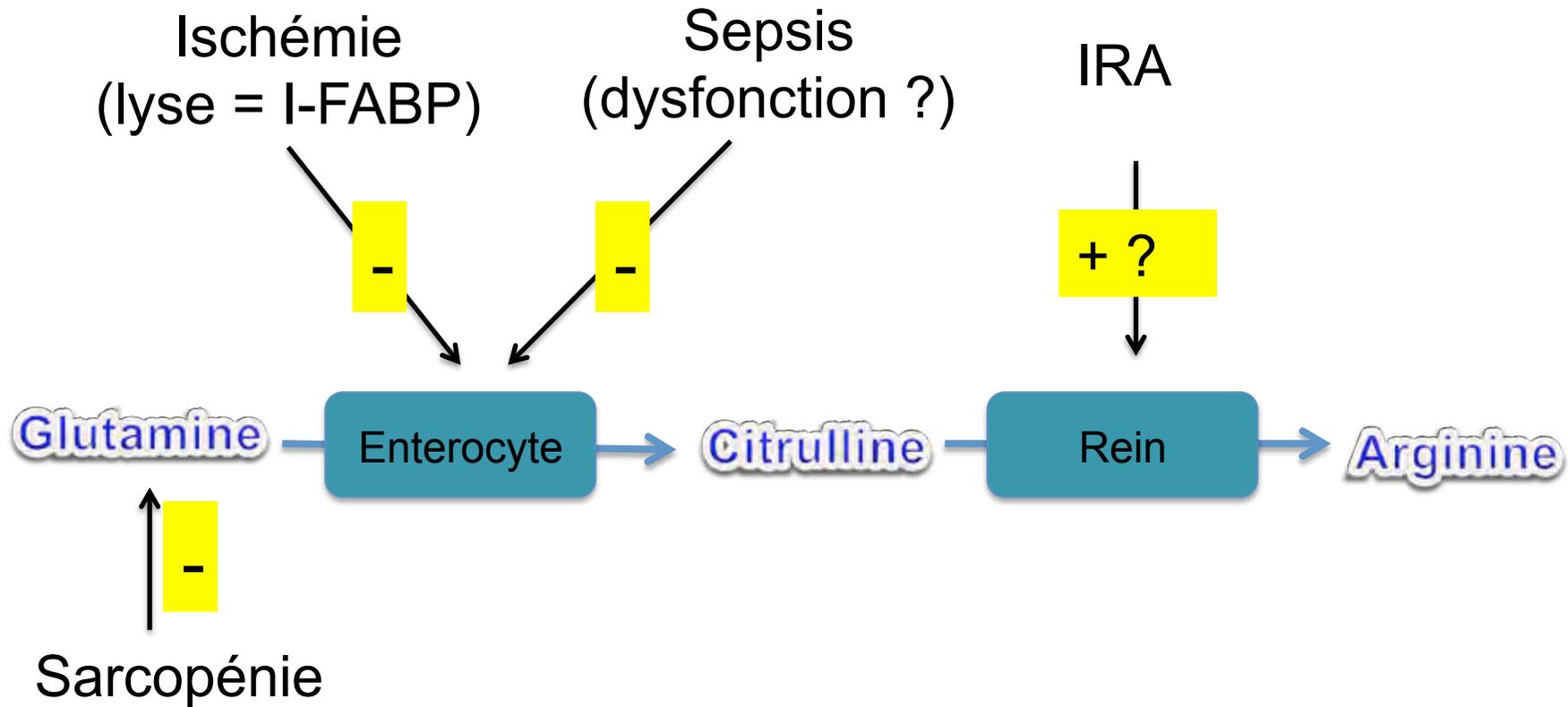
# Citrullinémie et dysfonction intestinale



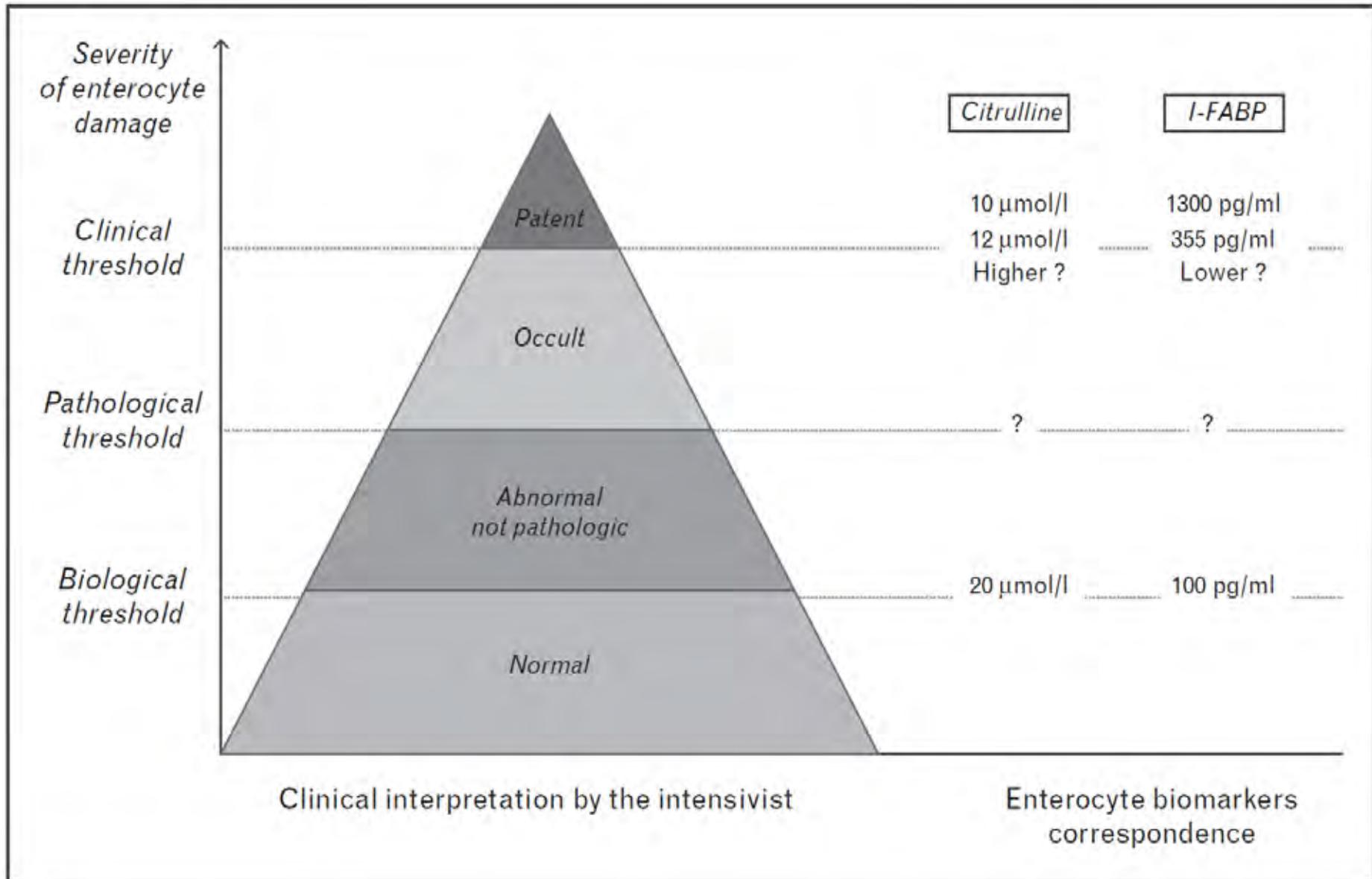
Citrullinémie = déterminants et limites en réa



# Citrullinémie = déterminants et limites en réa



# Biomarqueurs = quels seuils ?



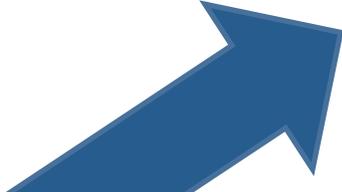
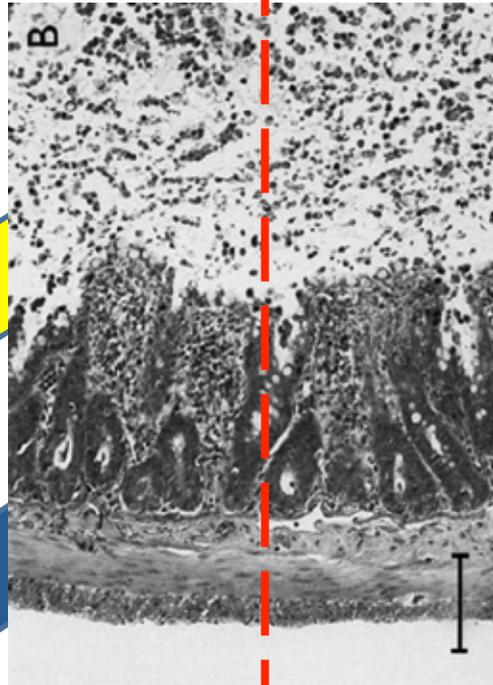
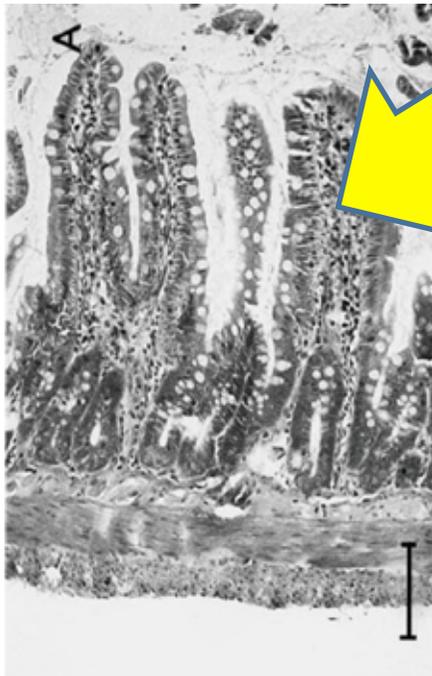
Défaillance digestive

~

Conclusions

Questions

# Réversibilité de l'atteinte du tube digestif

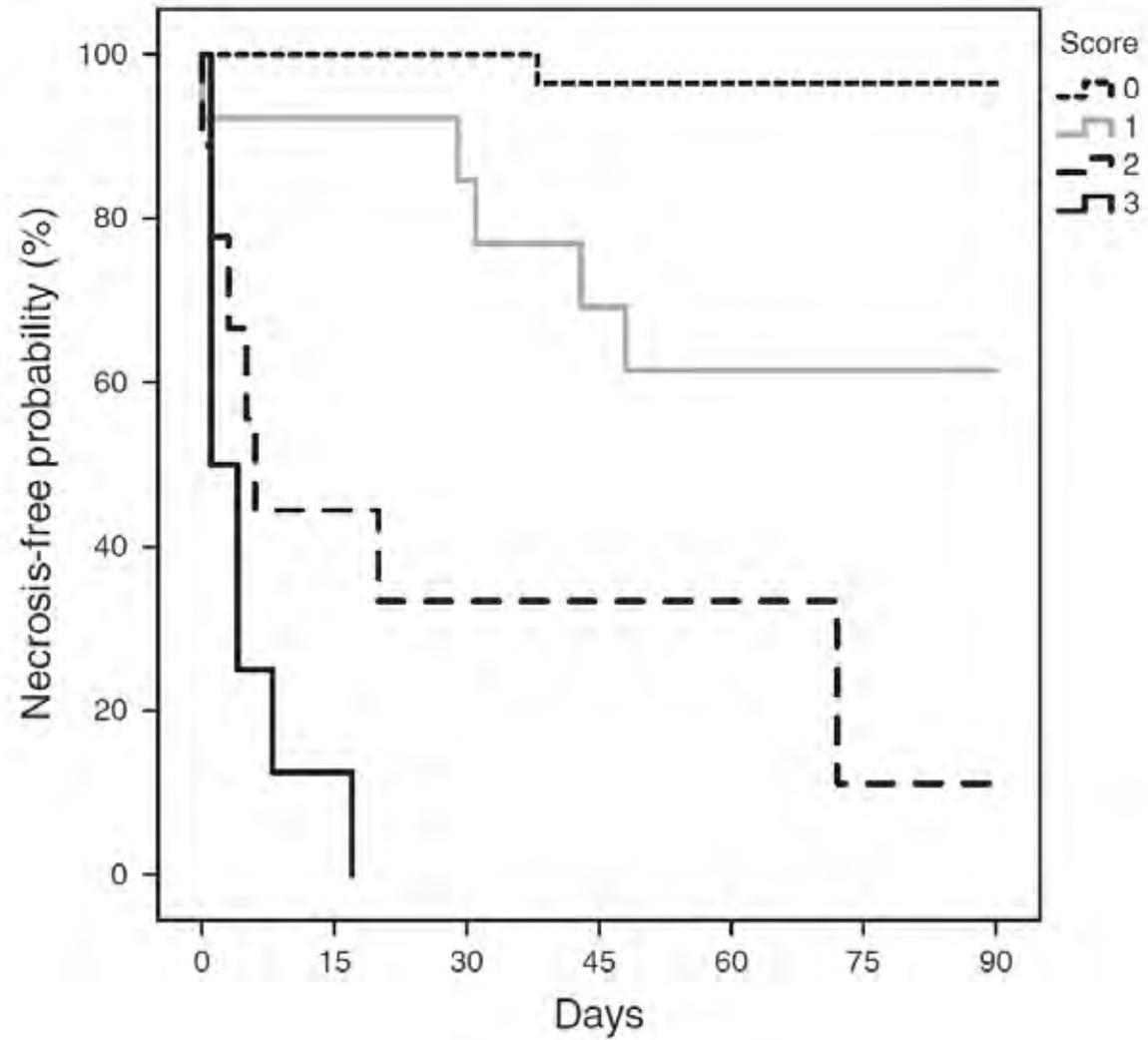


# Facteurs de risque de nécrose intestinale

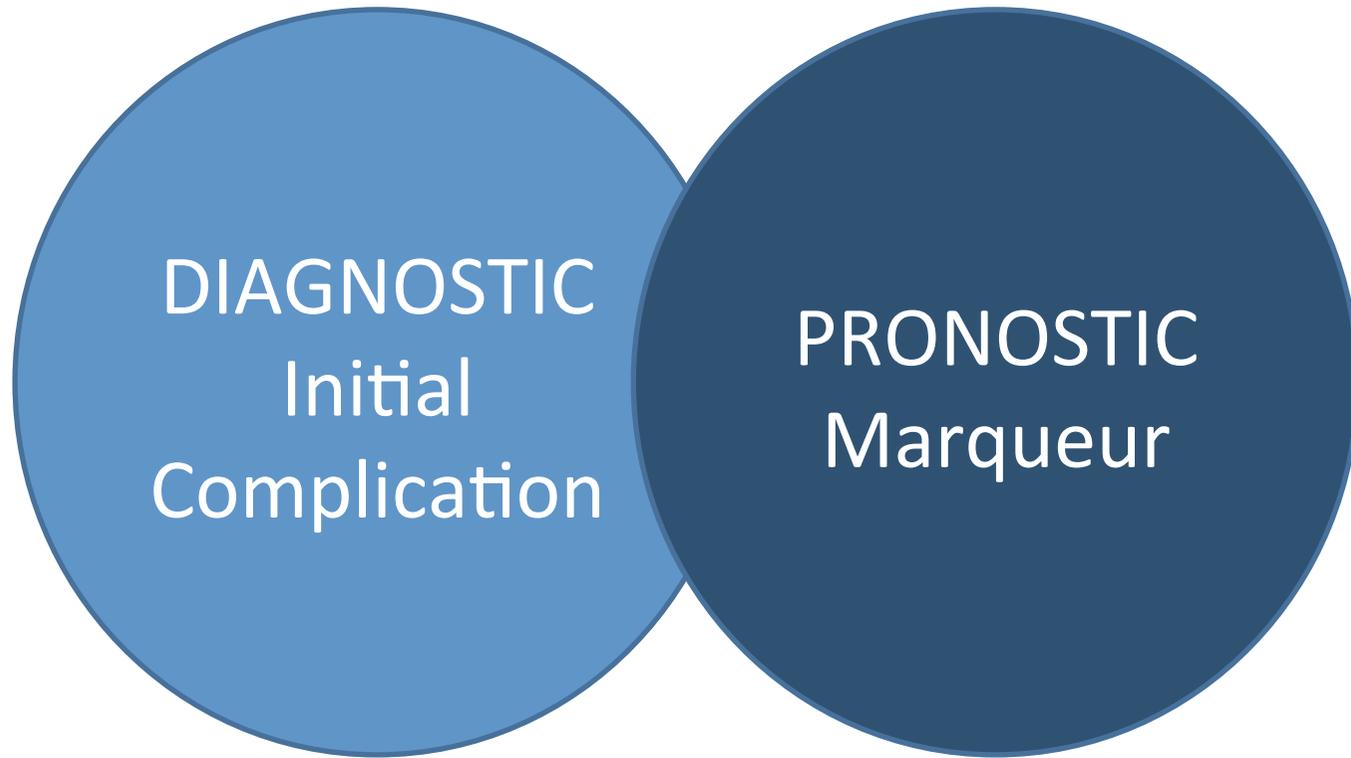
N = 67

<b>Organ failure</b>	<b>0.03</b>	<b>3.1</b>	<b>(1.1–8.5)</b>
WBC >10 G/l	0.76	—	—
<b>Serum lactate levels &gt;2 mmol/l</b>	<b>0.01</b>	<b>4.1</b>	<b>(1.4–11.5)</b>
<i>Computed tomographic signs</i>			
Bowel wall thickening	0.29	—	—
Bowel wall thinning	0.10	—	—
Decreased bowel wall enhancement	0.74	—	—
<b>Bowel loop dilation</b>	<b>0.02</b>	<b>2.6</b>	<b>(1.2–5.7)</b>

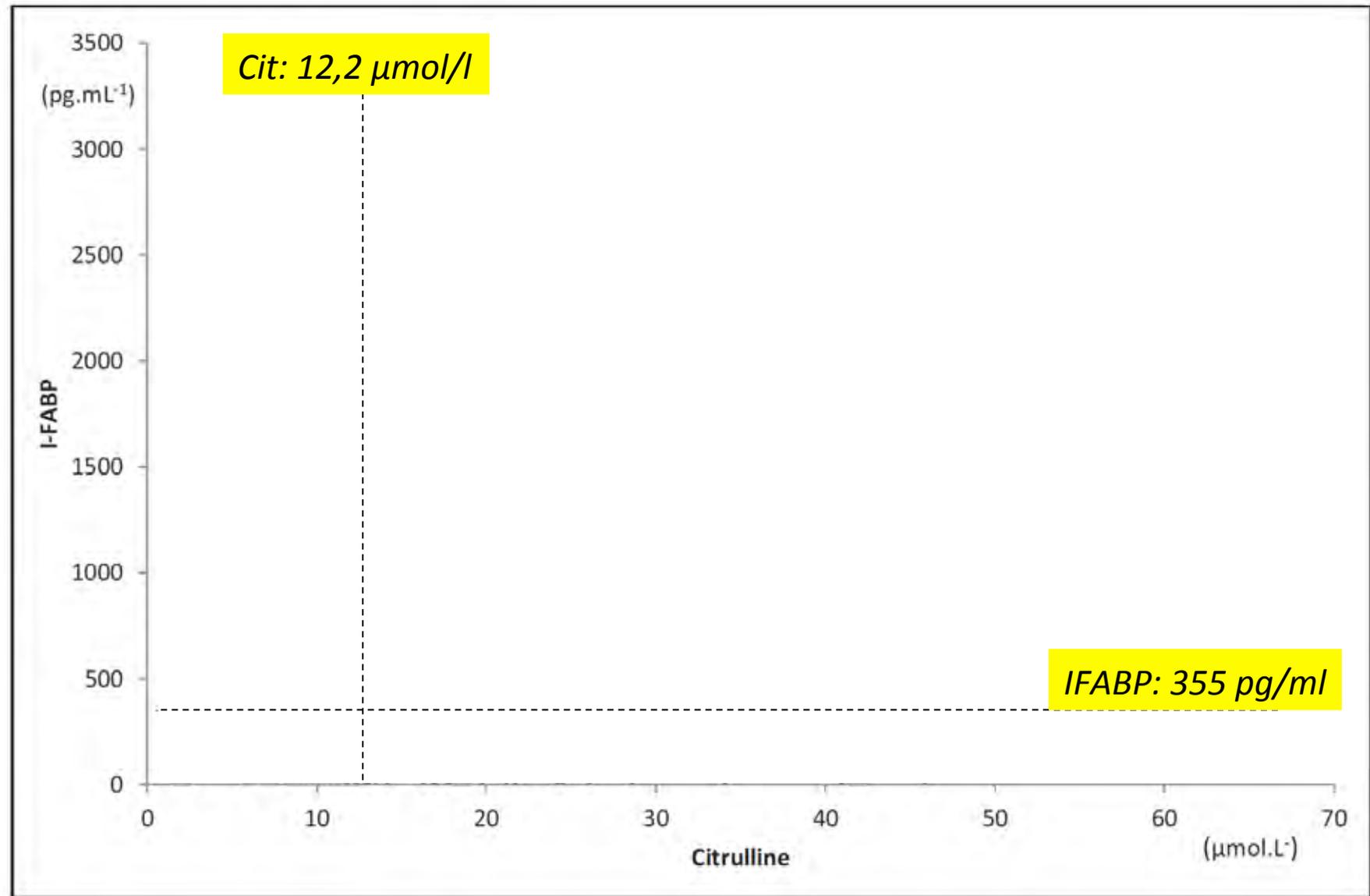
# Probabilité de nécrose intestinale



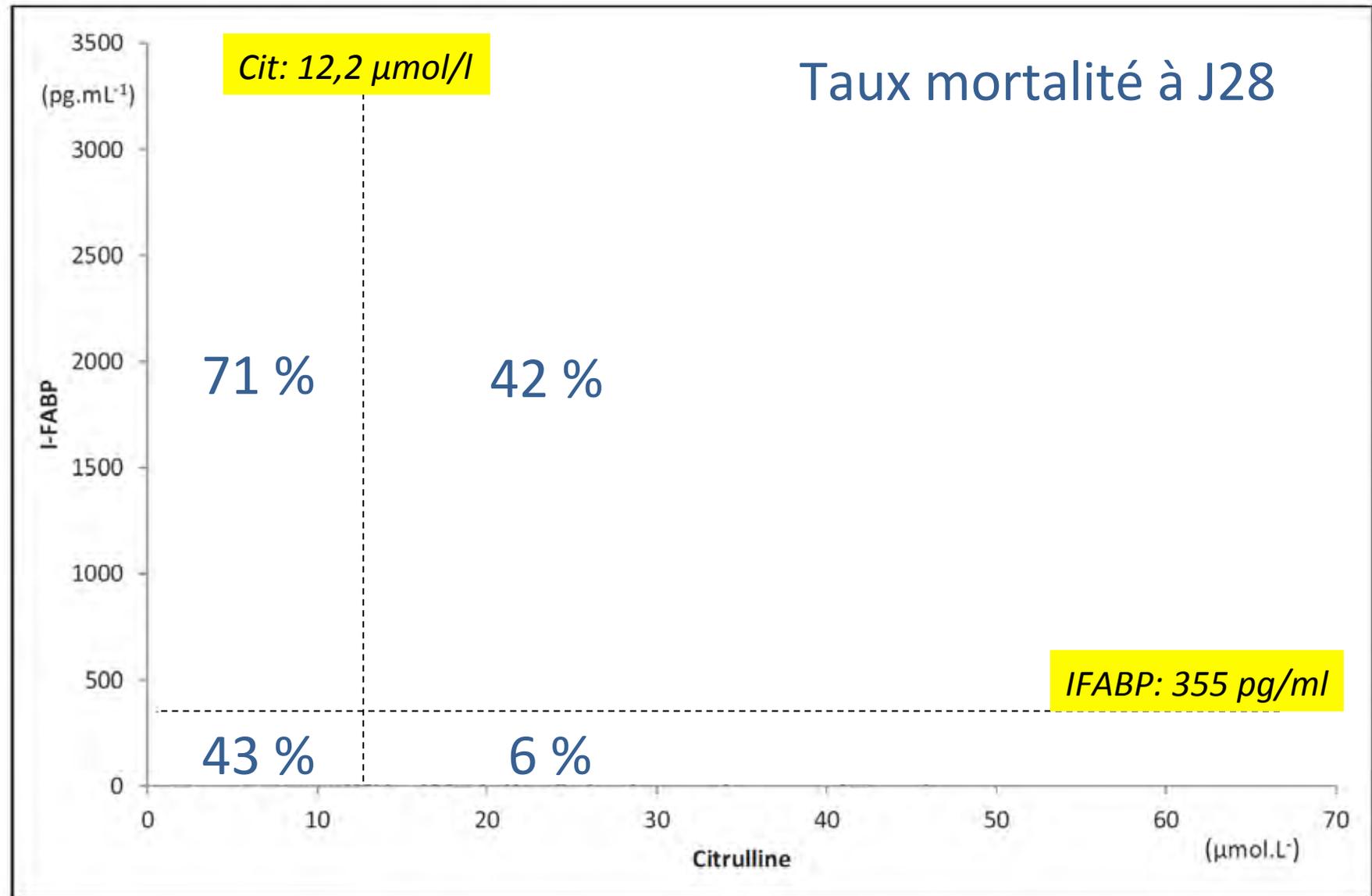
# Atteinte digestive chez le patient critique



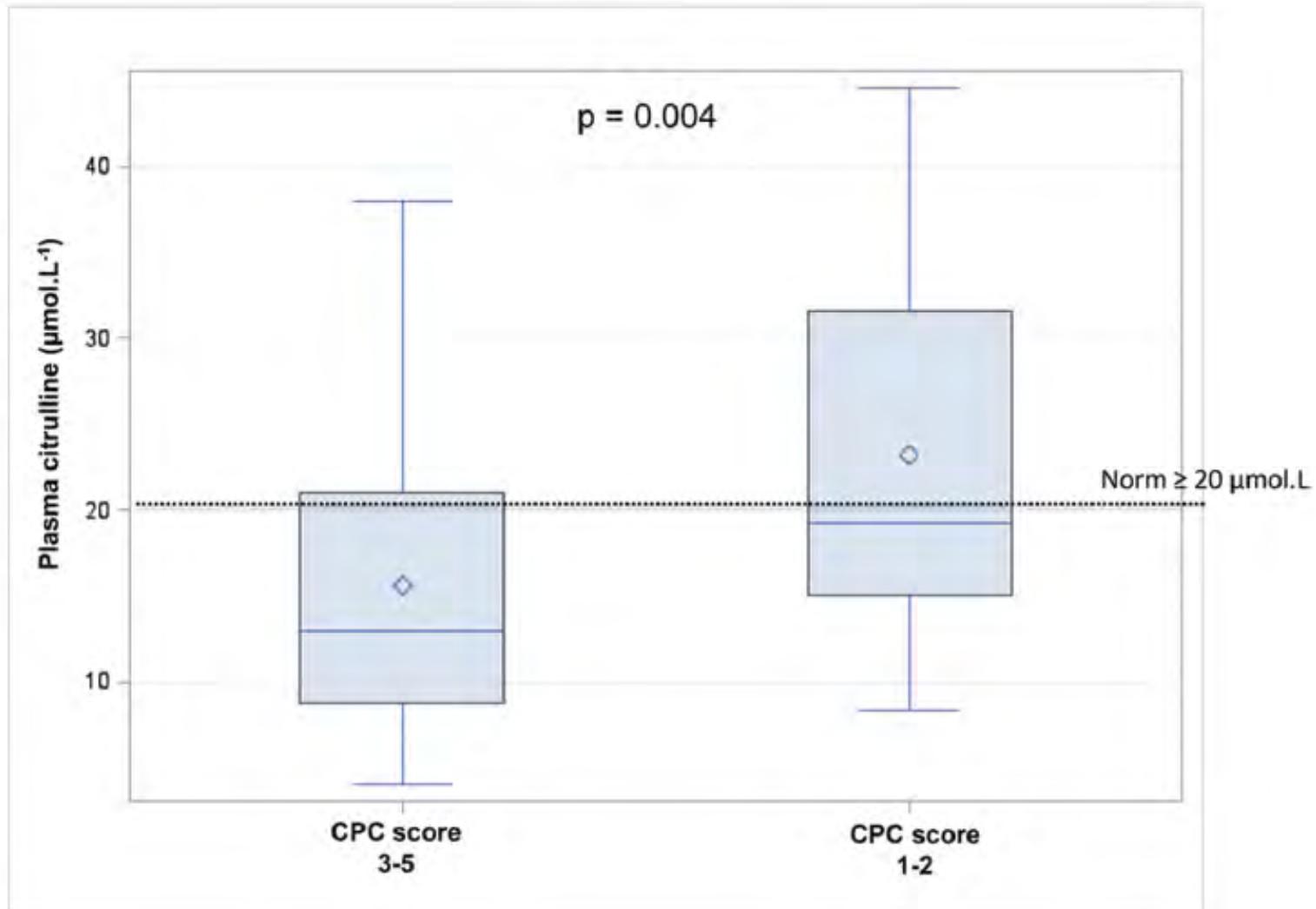
# Mortalité à J28



# Mortalité à J28



# Pronostic neurologique après un ACR



# Souffrance intestinale

Fréquente

Silencieuse

Multifactorielle

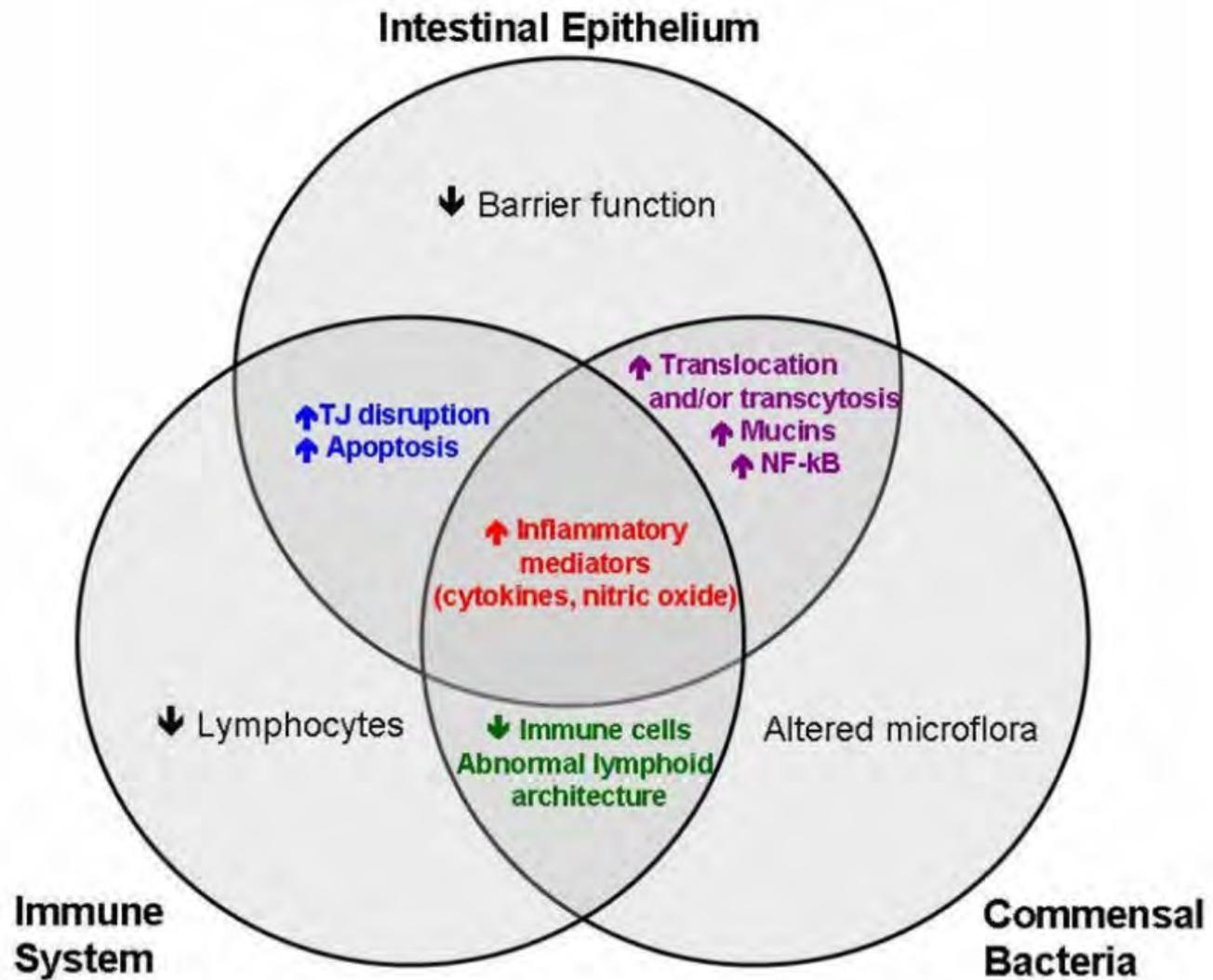
Grave/Marqueur

Démarche proactive



**MERCI**

# Flore, Barrière, Immunité



# Options thérapeutiques ?

