INTERET DE L ’ECHOCARDIOGRAPHIE DANS LA PRISE EN CHARGE DE L ’EMBOLIE PULMONAIRE

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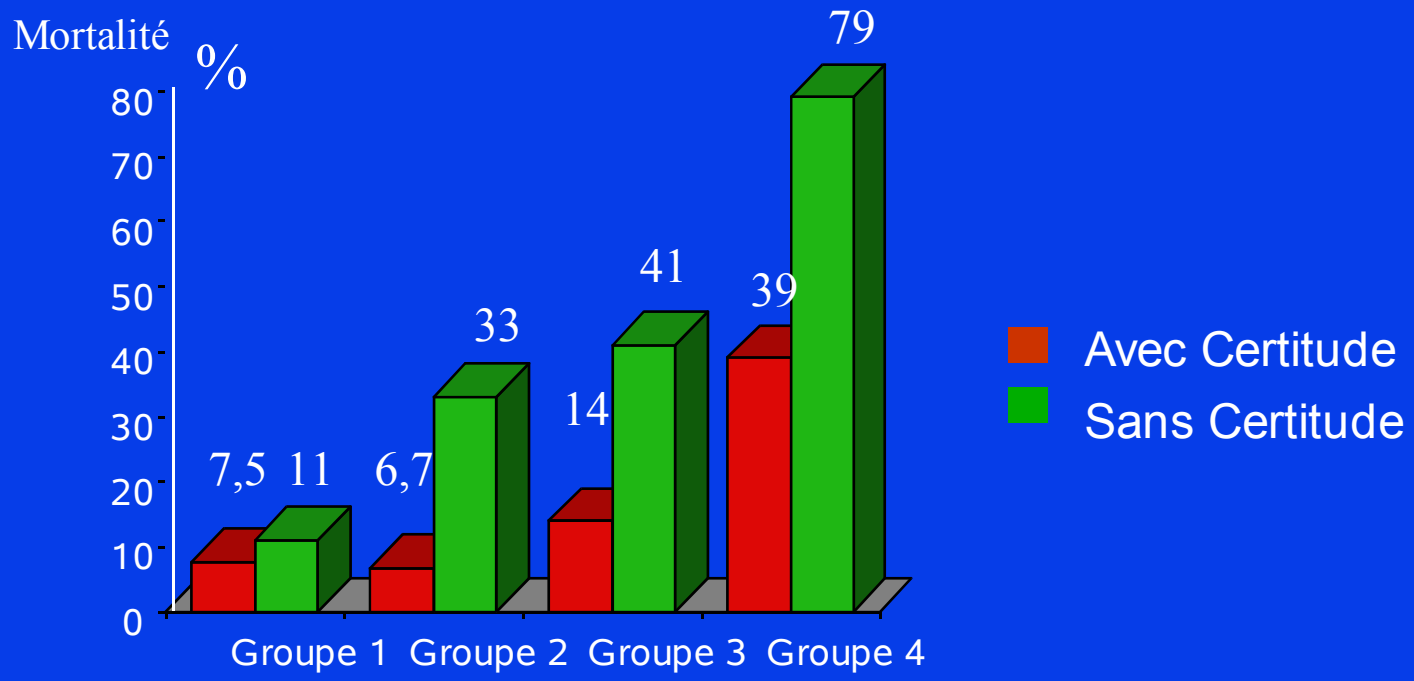
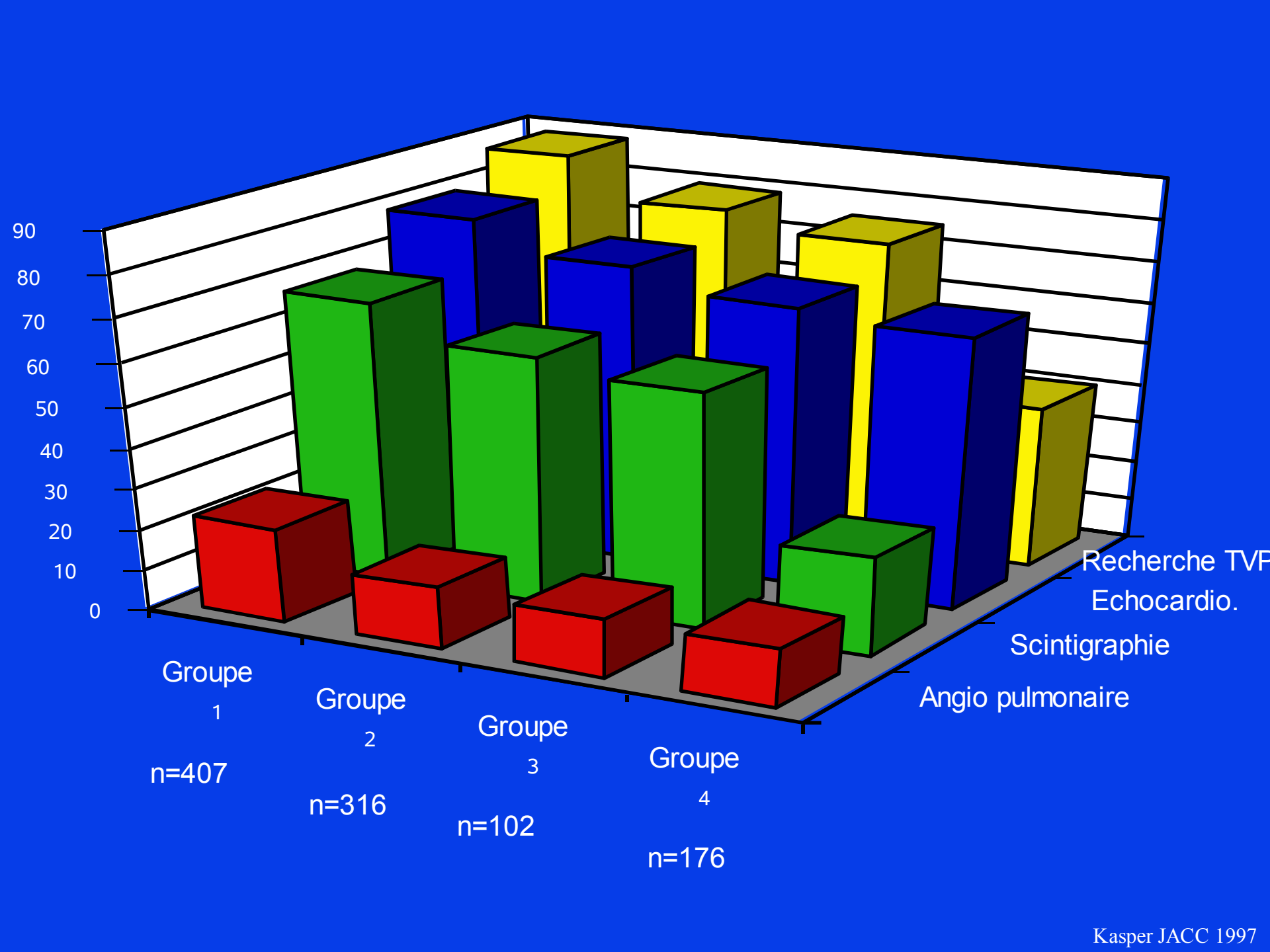
I

INTERET DIAGNOSTIQUE

- **MAPPET : 1001 EP massive**

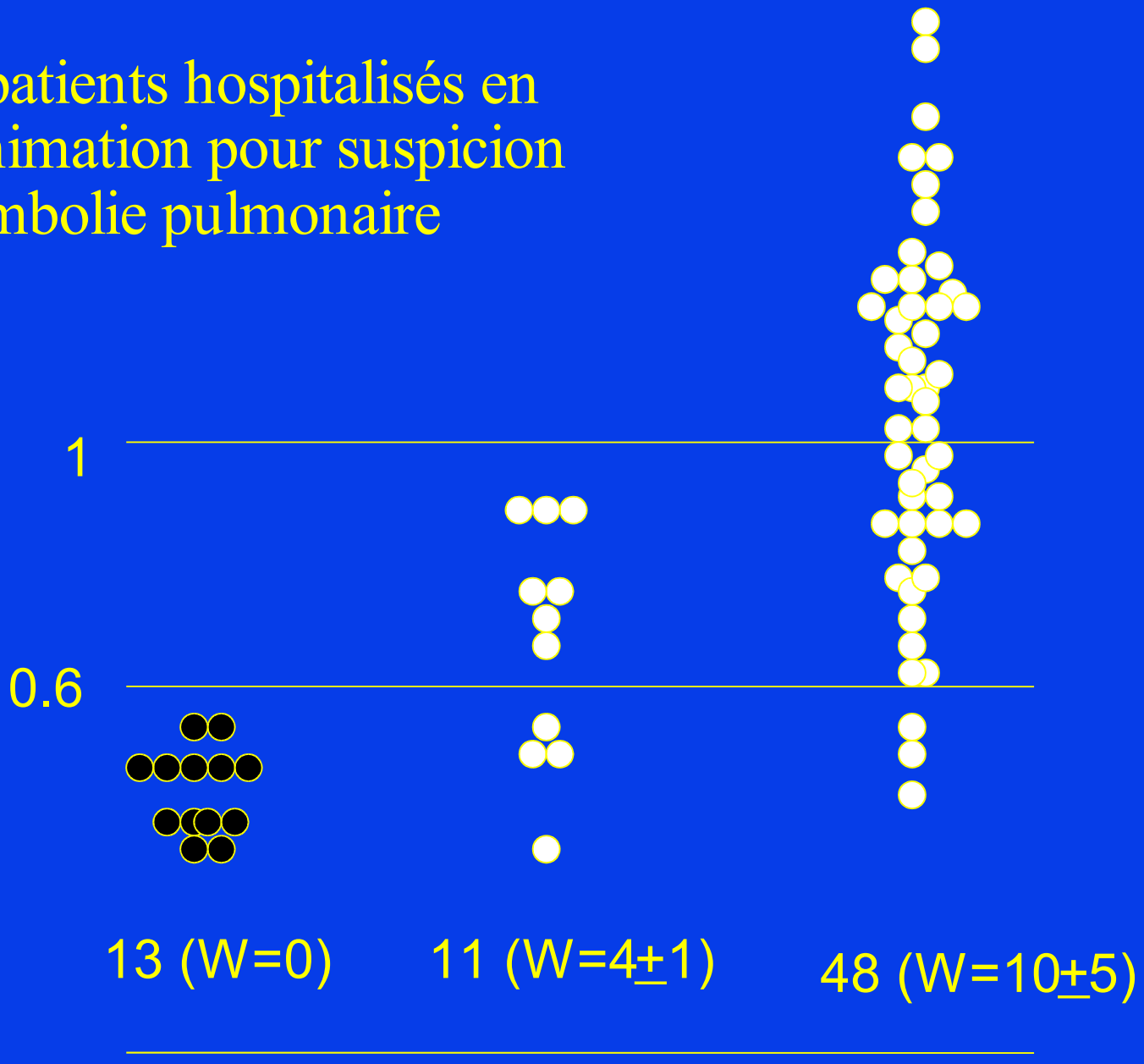


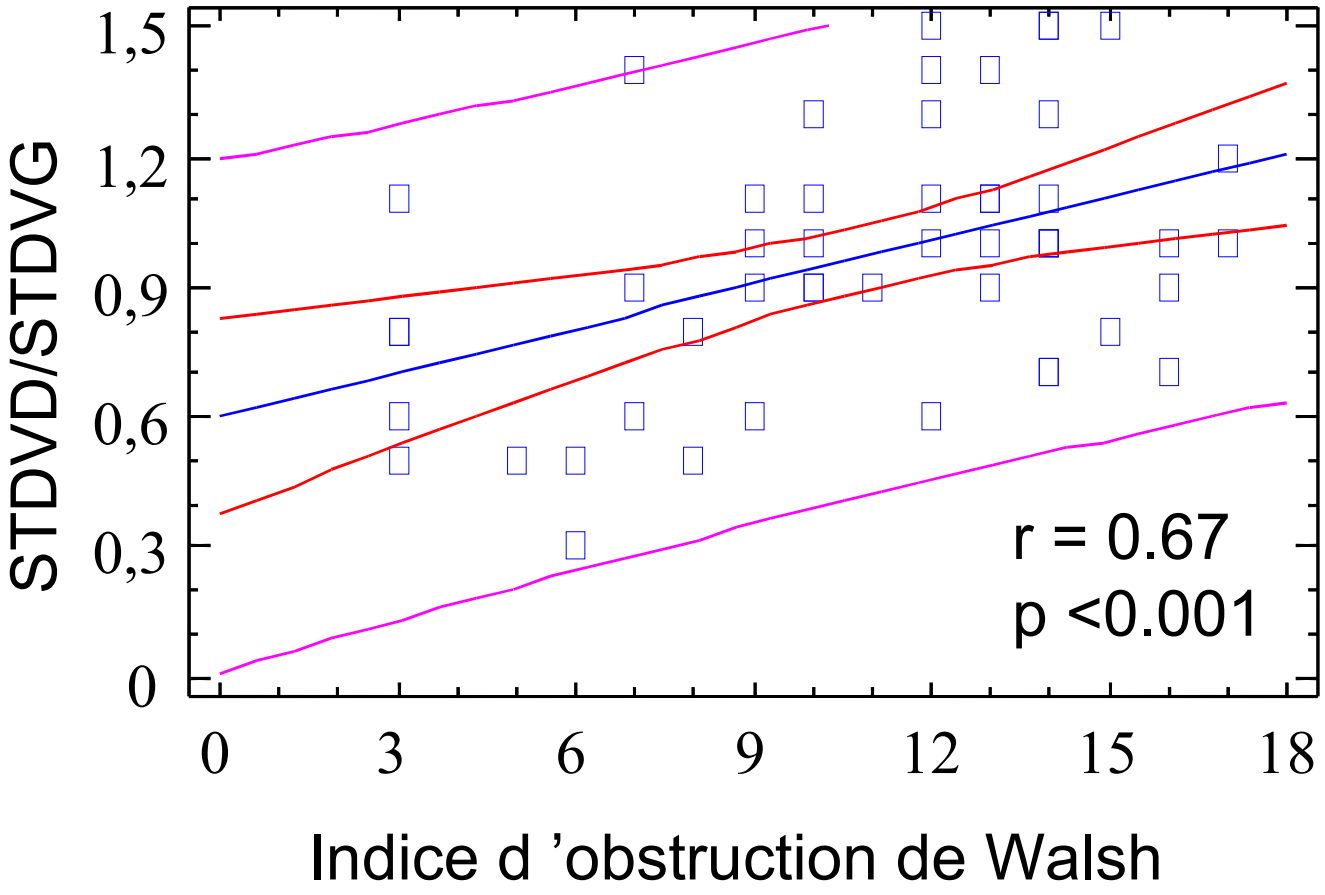
Kasper JACC 1997



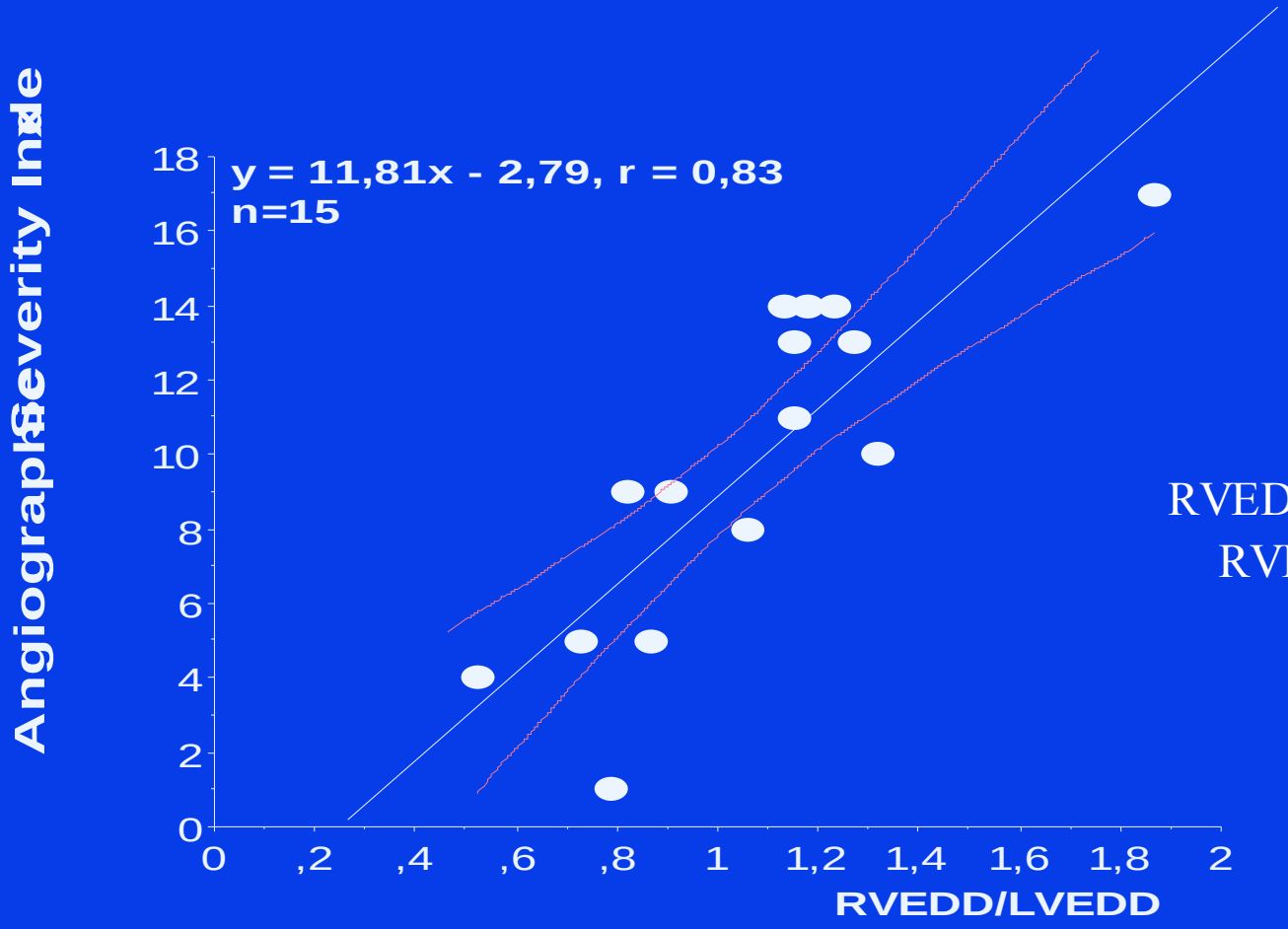
Kasper JACC 1997

72 patients hospitalisés en réanimation pour suspicion d'embolie pulmonaire




STDVD/STDVG
1,5
1,2
0,9
0,6
0,3
0
0
3
6
9
12
15
18
Indice d 'obstruction de Walsh
r = 0.67
p <0.001

n = 50

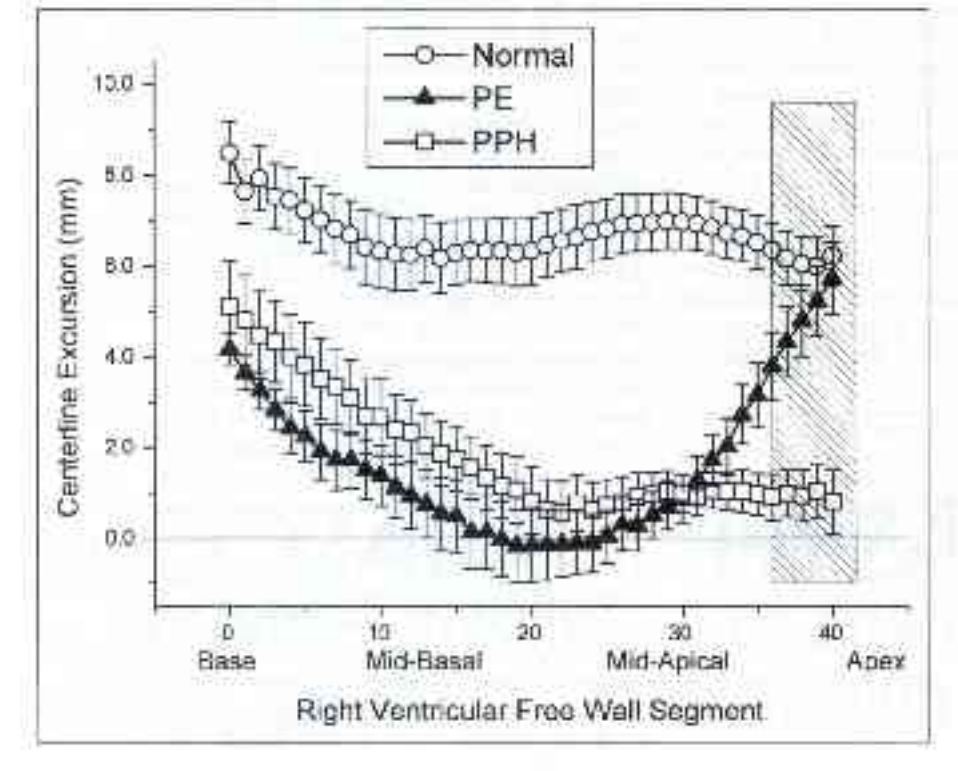


RVEDD/LVEDD ≥ 0,5

RVEDD ≥ 25 mm

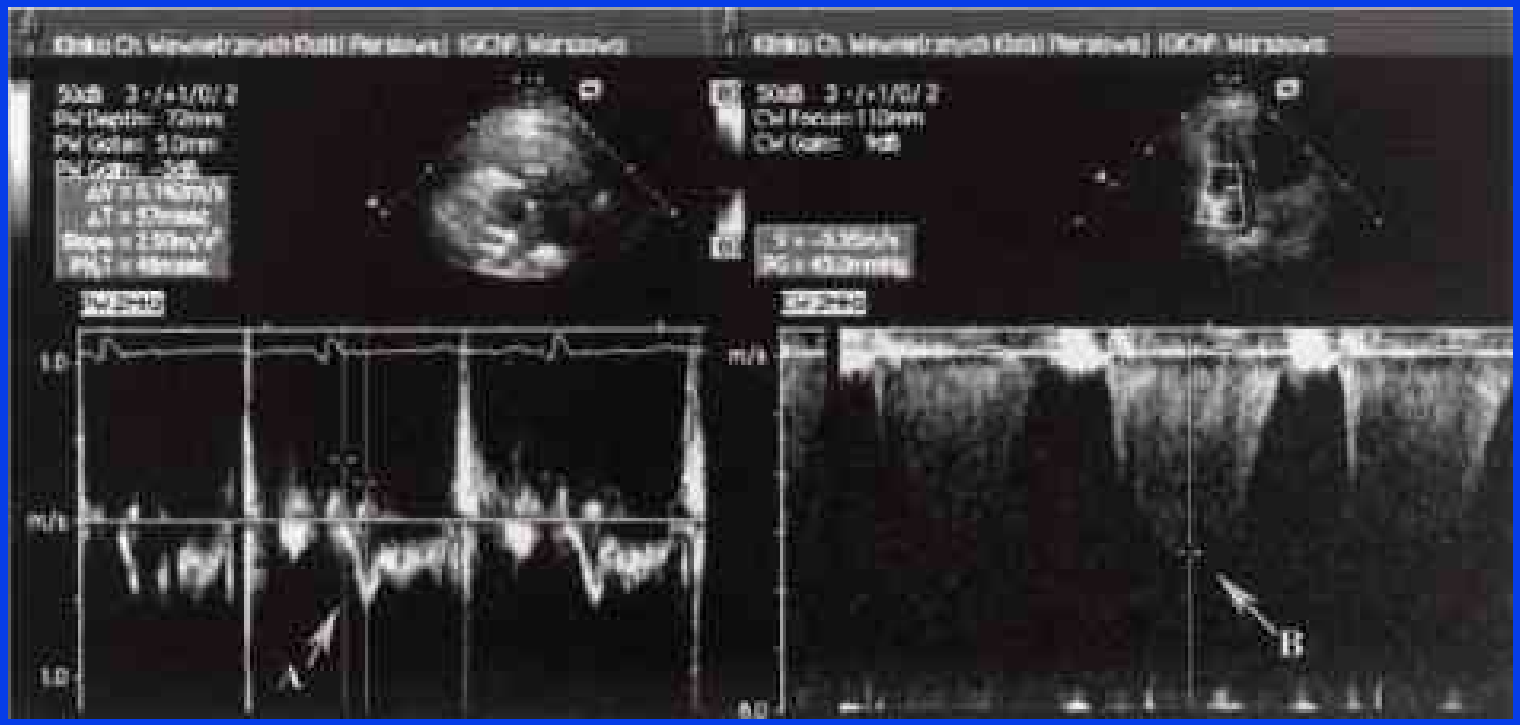
KASPER Am J Cardiol 1980

L'HYPOKINESIE VD



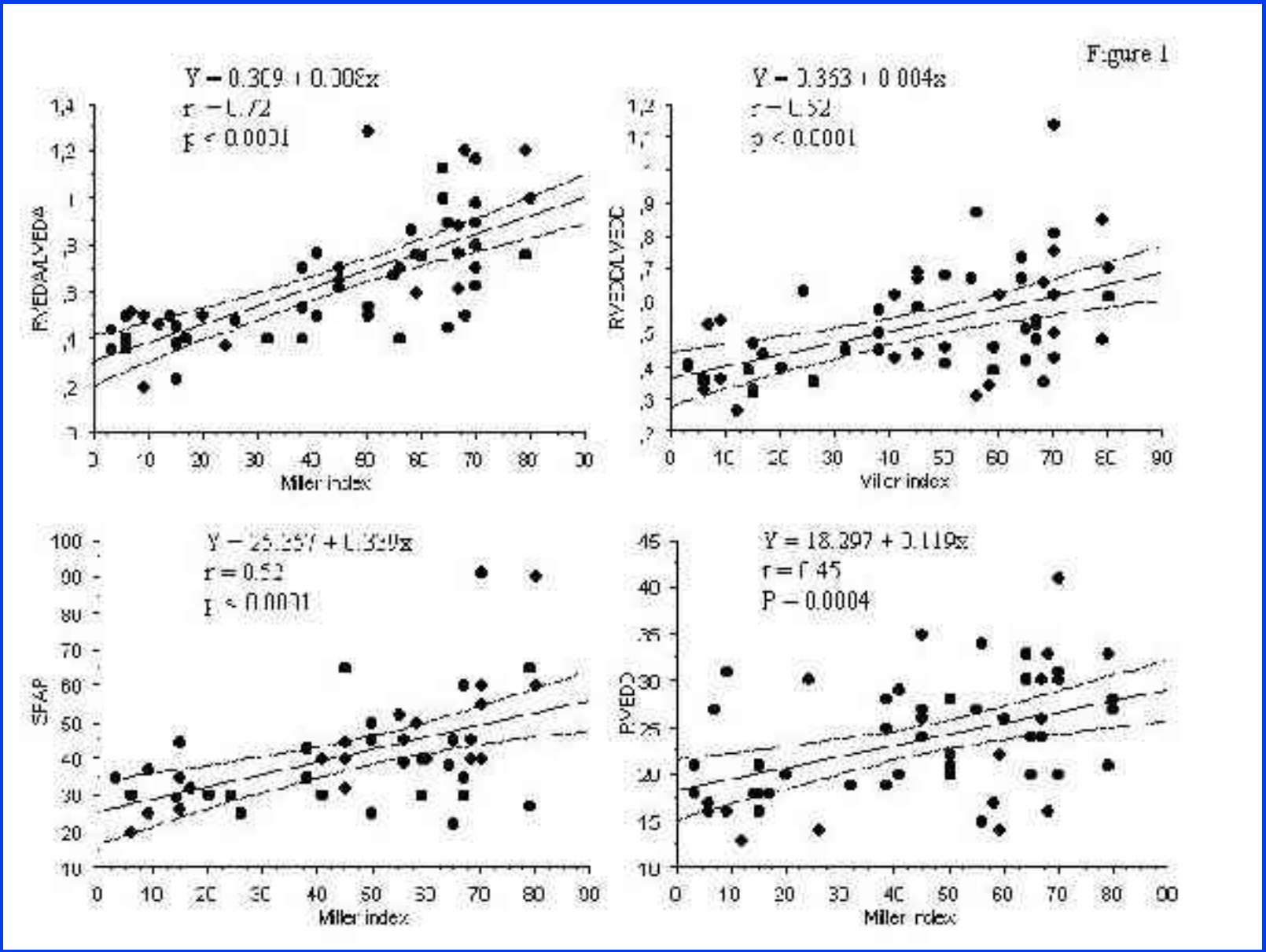
McConnell Am J Cardiol

LE DOPPLER AP

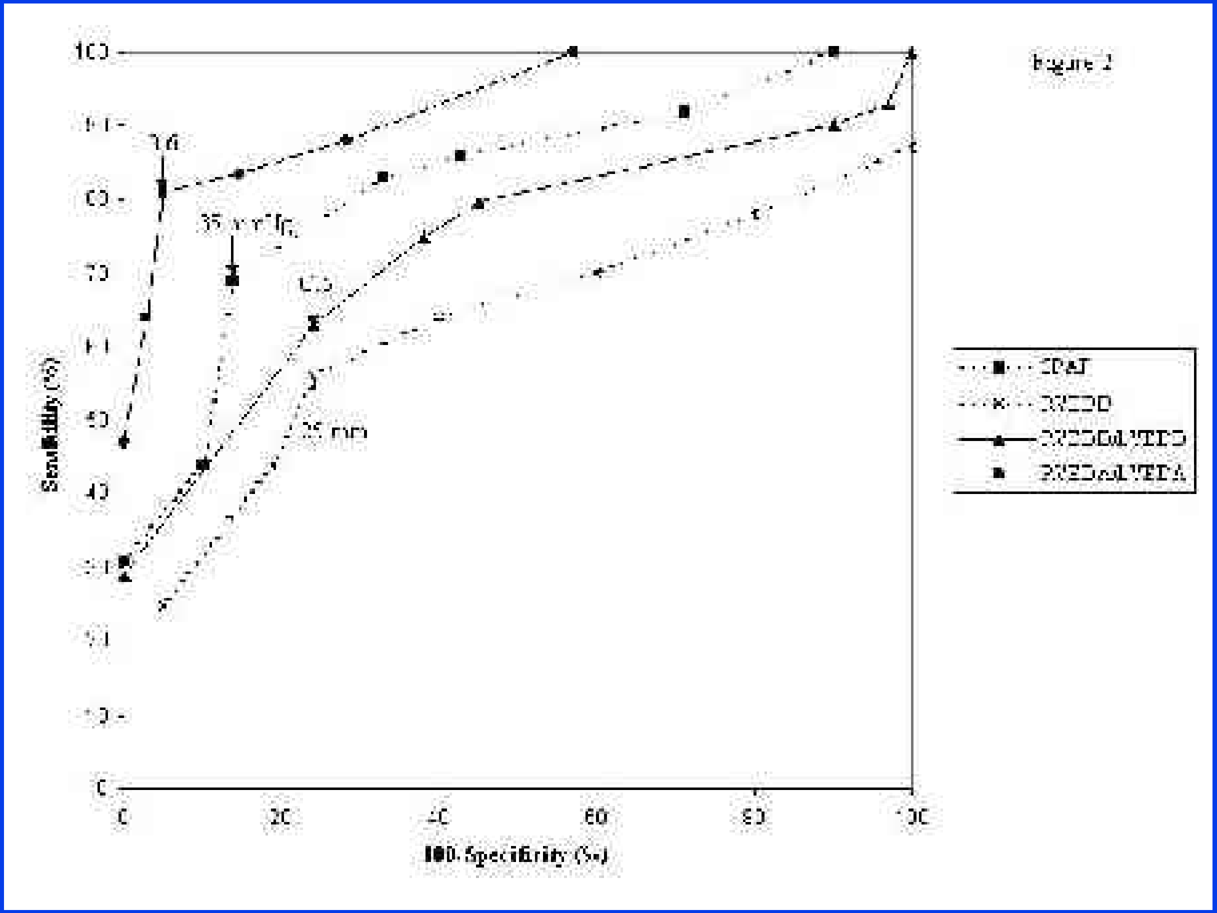


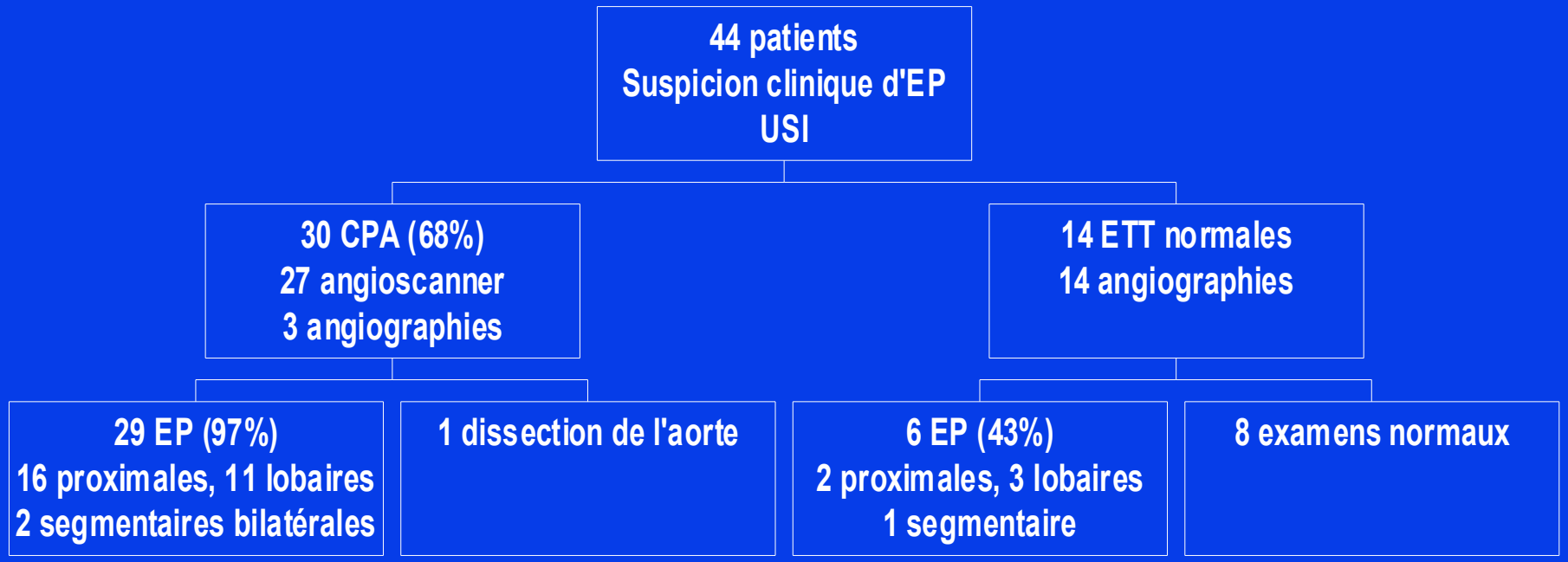
Kurzyna AJC 2002

N = 57 patients avec EP



Mansencal Am J Cardiol 2003


Sensitivity (%)
0
20
40
60
80
100
100-Specificity (%)



Sens 85%, Spe 89%
VPP 97%, VPN 57%

Sensibilities spécificities & predictive values of Echo. in PE

n	sens.	spéc.	PPV	NPV	authors
61	88	100	100	54	*Jardin NPresse 91*
44	85	89	97	57	*Vieillard-Baron ICM 98*
67	19	100	100	37	*McConnel AmJC 96*
100	25	94	90	38	*Kurzyna AmJC 02*
					60/60

Mais quid du diagnostic de certitude?

TTE &Venous ultrasonic examination ?

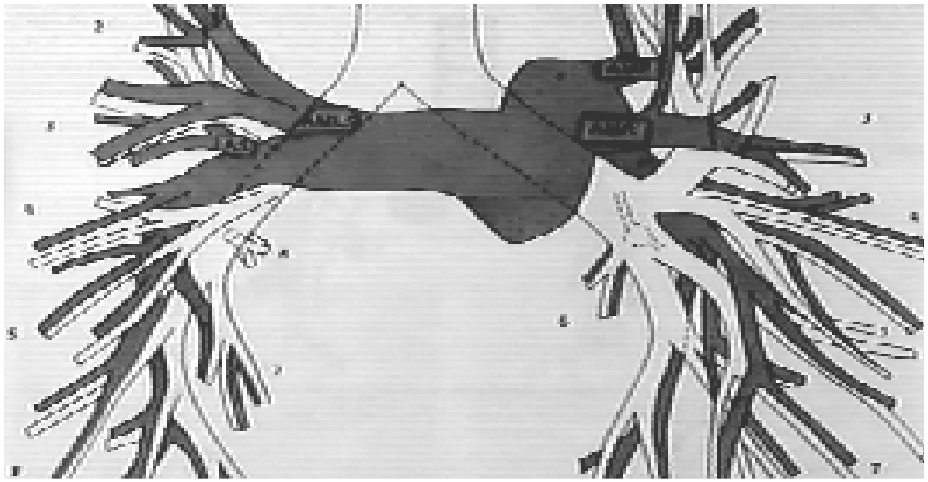
	TTE+		Total
VU+	48 (50%)	28 (29%)	76 (79%)
VU-	12 (13%)		20 (21%)
Total	60 (63%)	36 (37%)	96 (100%)

Mansencal Presse Med 2002

INTERET DE L'ETO

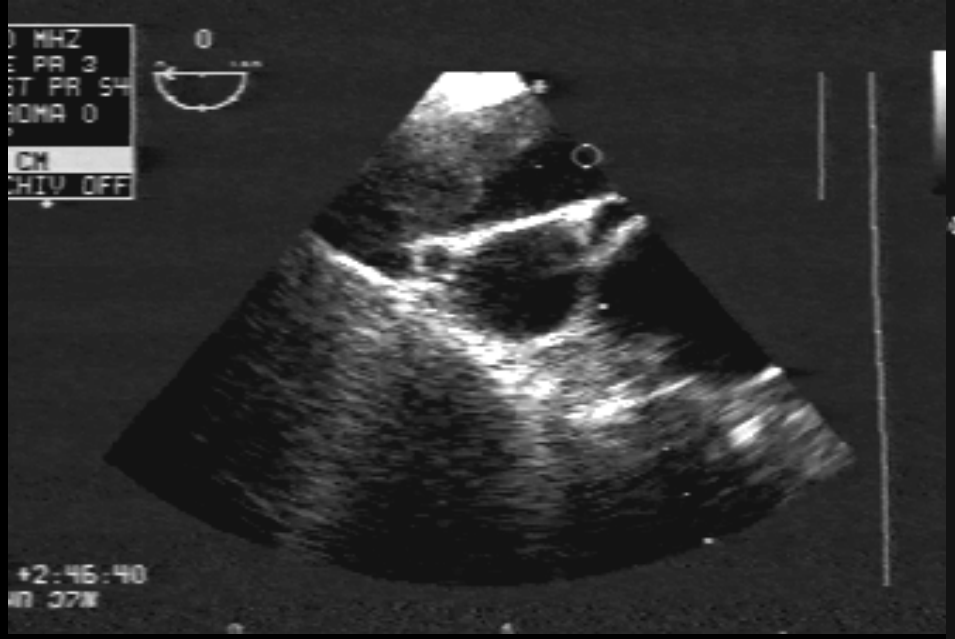
- **Femme 49 ans, adressée aux urgences**
  - **Insuffisance circulatoire aiguë**
    - » **PAS 90 mmHg, FC 120/mn**
  - **Insuffisance respiratoire aiguë**
  - **Température 38°5C**
  - **Gaz du sang**
    - » **PaO2 50 mmHg, PaCO2 70mmHg, BE -15 mEq/l**
  - **GB 18 000/mm^3**
  - **Rx Thorax F: normale**

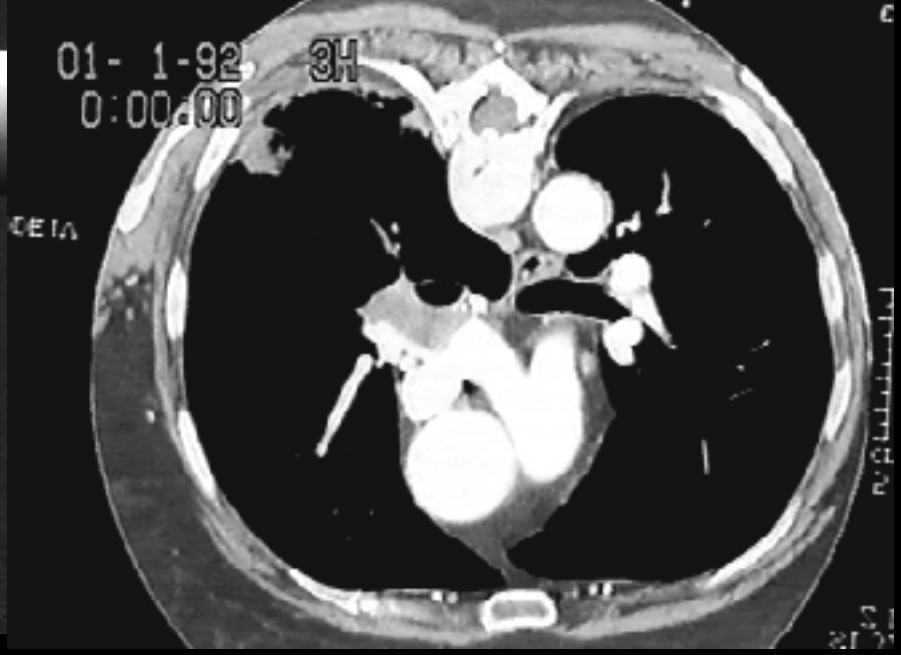
EP proximales	Sensibilité	Spécificité
Wittlich (56 J Am Soc E		
Pruszcyck Eur Heart J		
Steiner (11 AJR 1996		
Vieillard-ba (19 pts) Int		



EP centrales

Steiner AJR 1996	59%
Vieillard-baron Int Care Med 98	58%




01- 1-92 3H

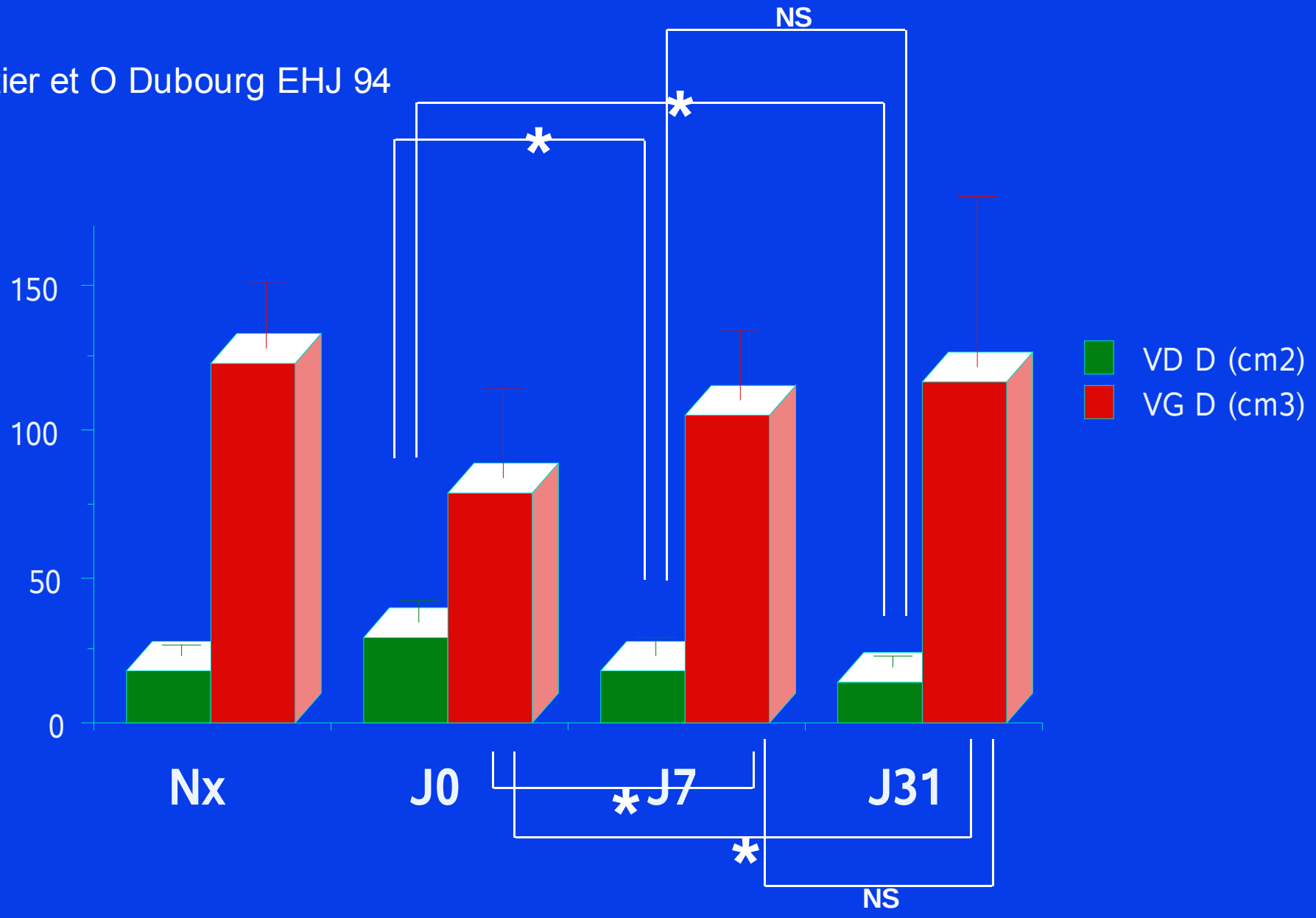

01- 1-92 3H

II

ECHOCARDIOGRAPHIE ET EVOLUTION NATURELLE

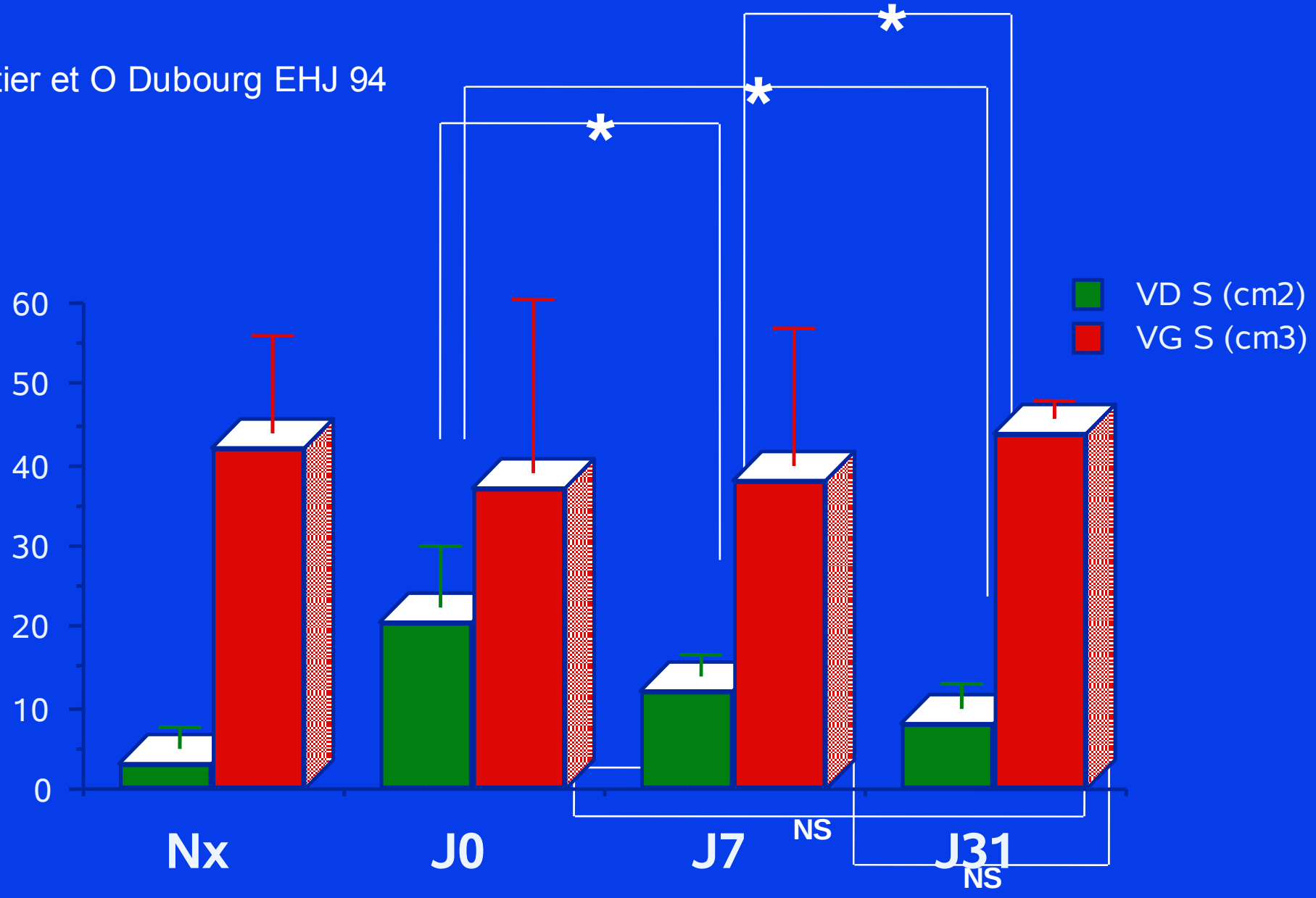
EP / 2D SVD et VVG Diastole

Valtier et O Dubourg EHJ 94



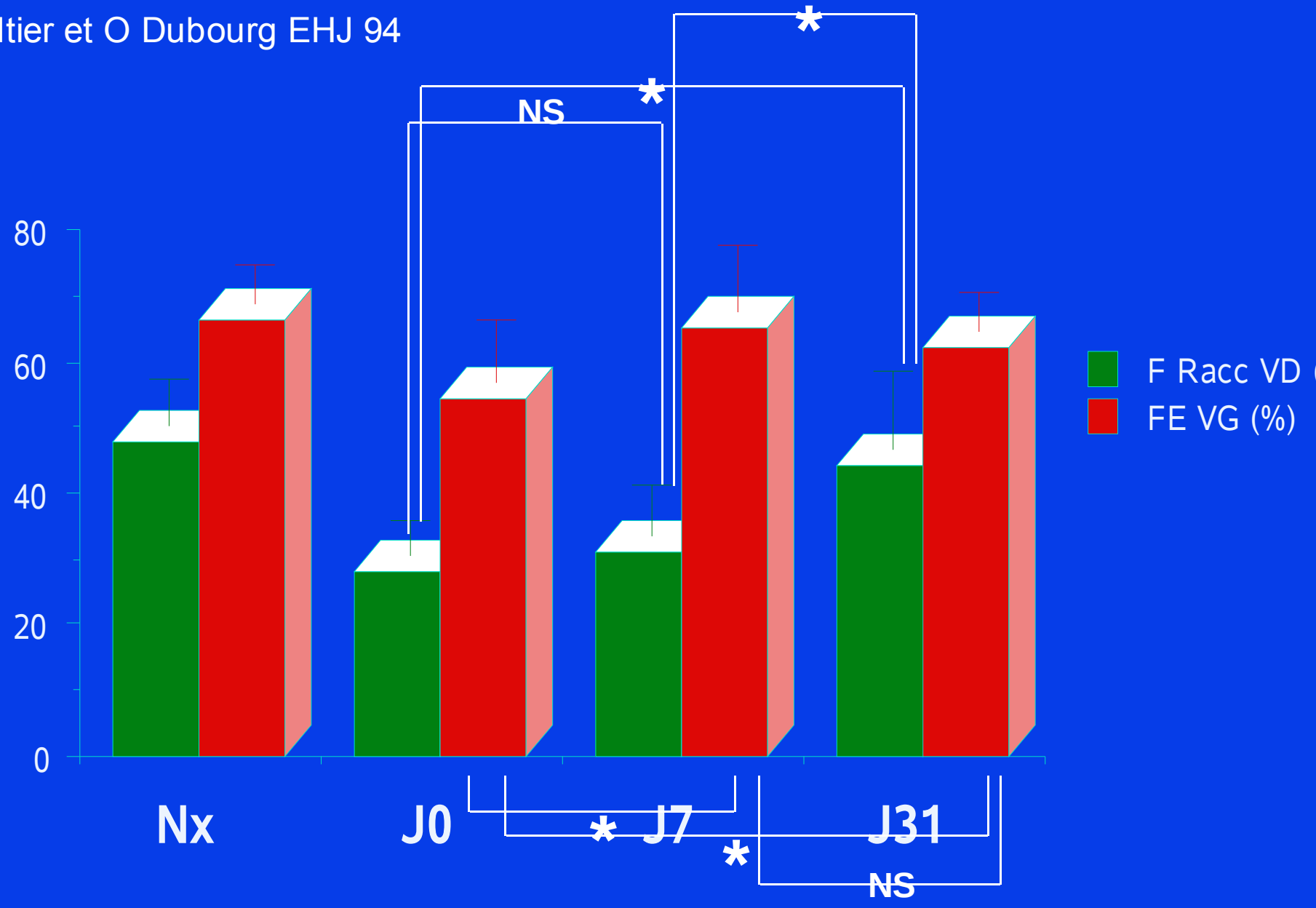
EP / 2D SVD ET VVG SYSTOLE

Valtier et O Dubourg EHJ 94

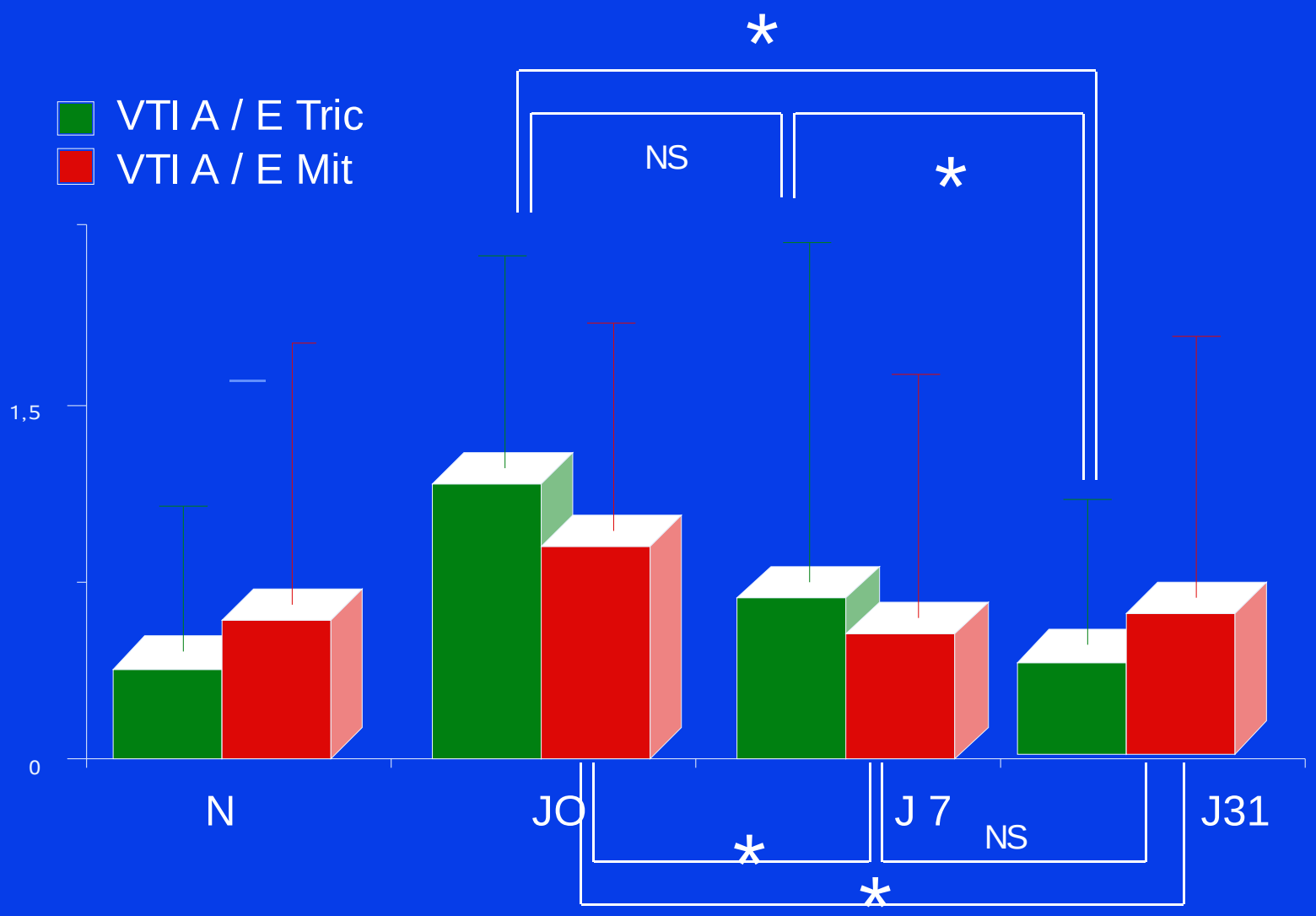


EP / F Racc VD et FE VG

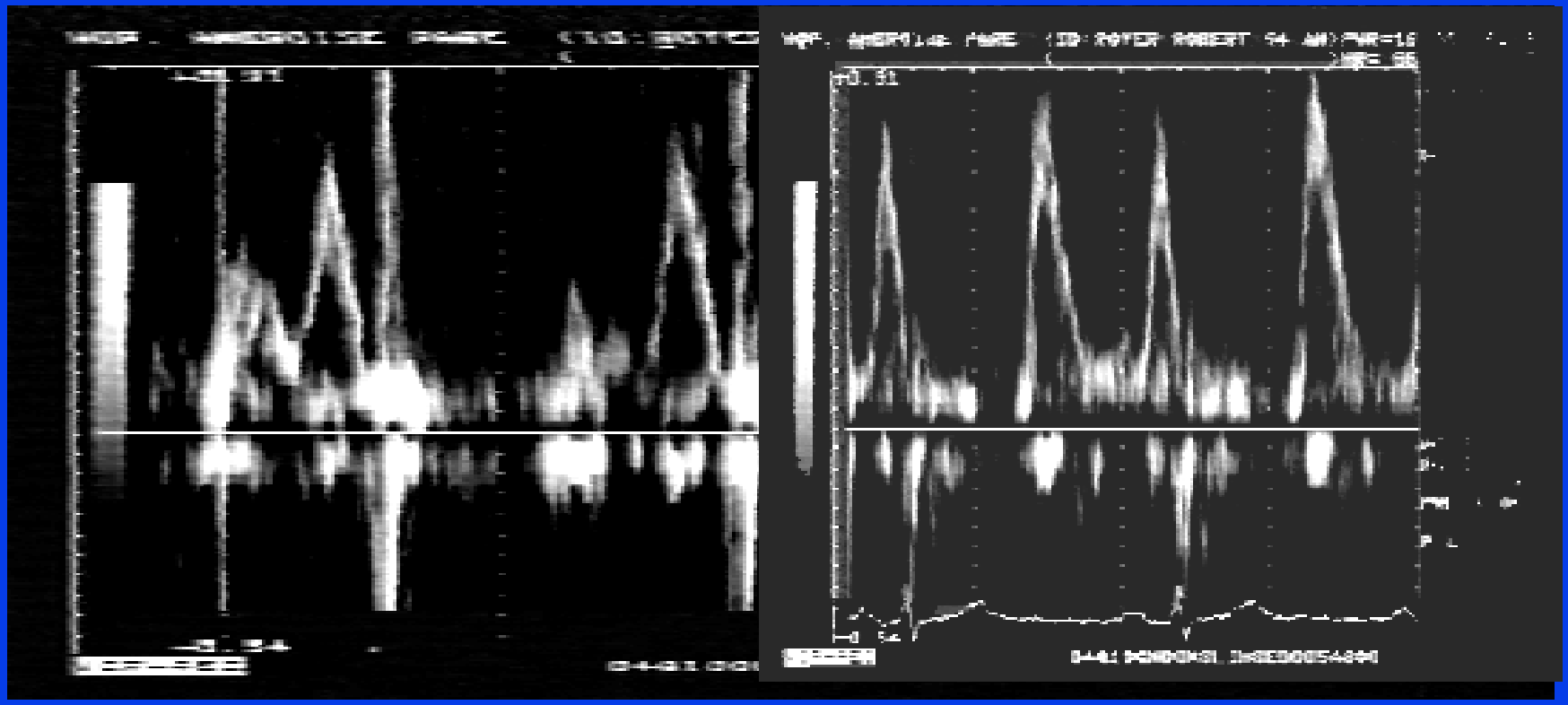
Valtier et O Dubourg EHJ 94



EP / rapport A/E anneau tricuspide et mitral



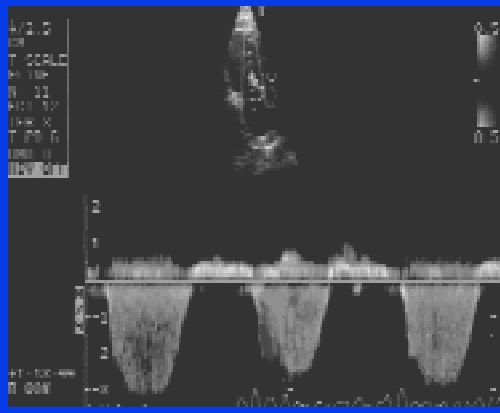
Valtier Europ Heart J 1994

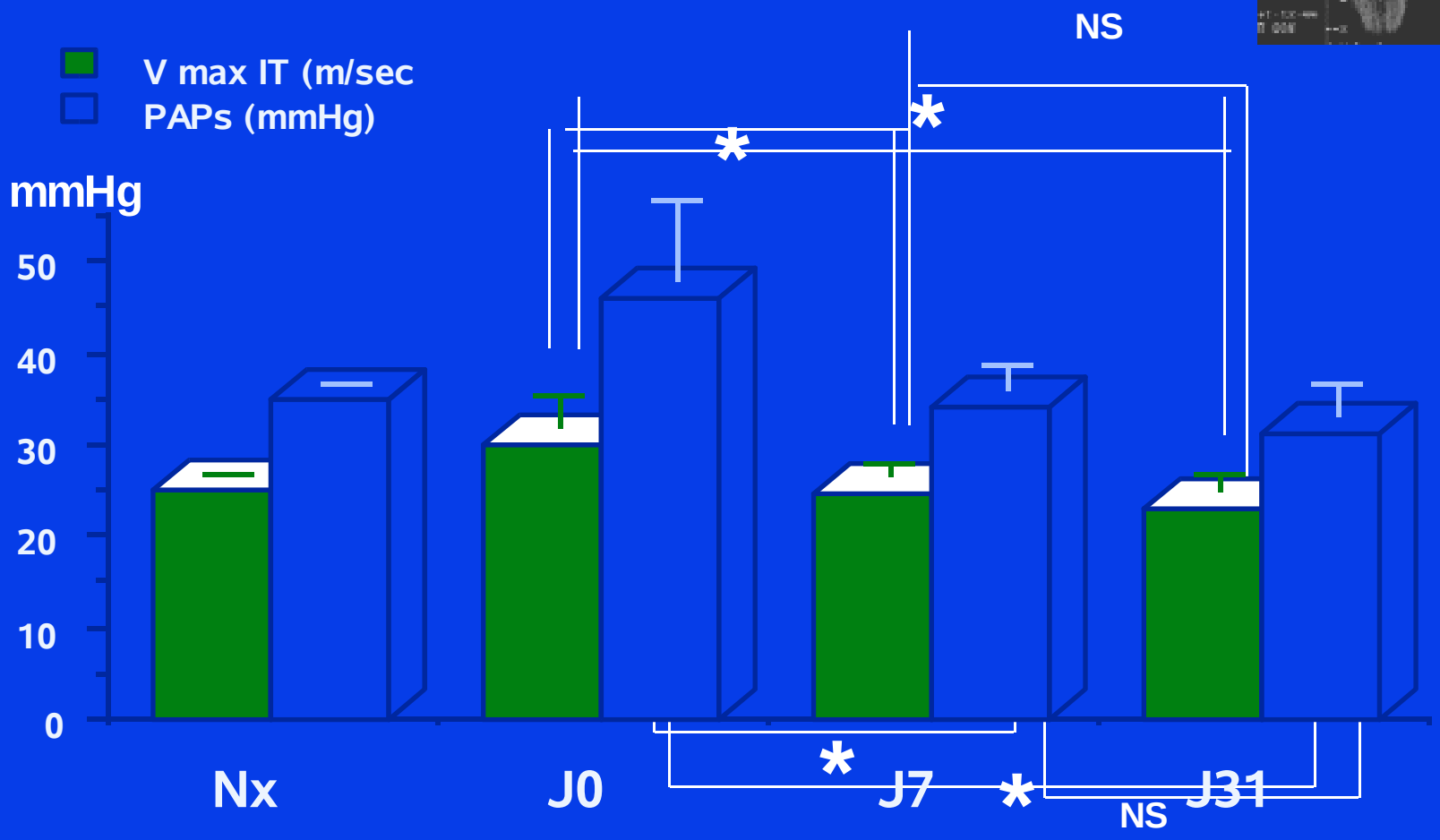


J 0

J 31

EMBOLIE PULMONAIRE / V max IT et PAPs

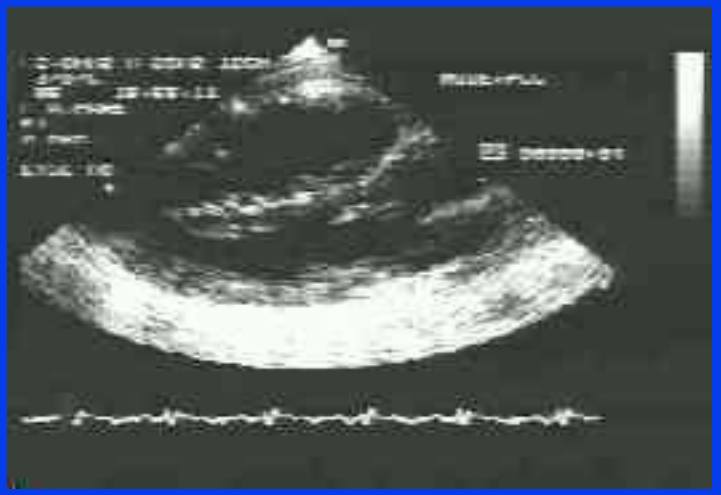




Valtier Europ Heart J 1994

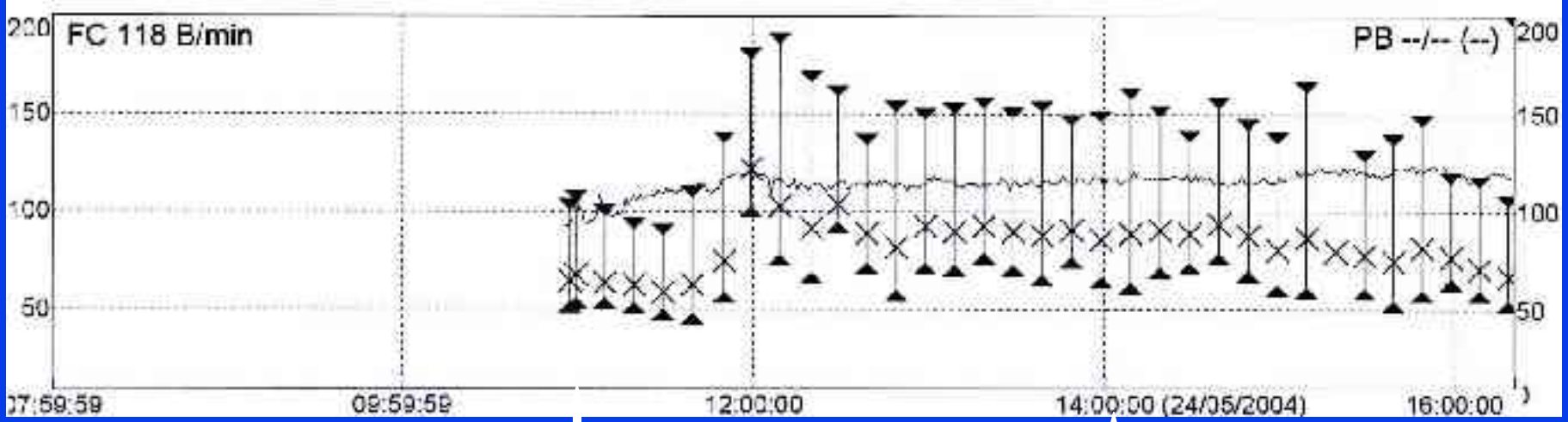
J1

H0



J7

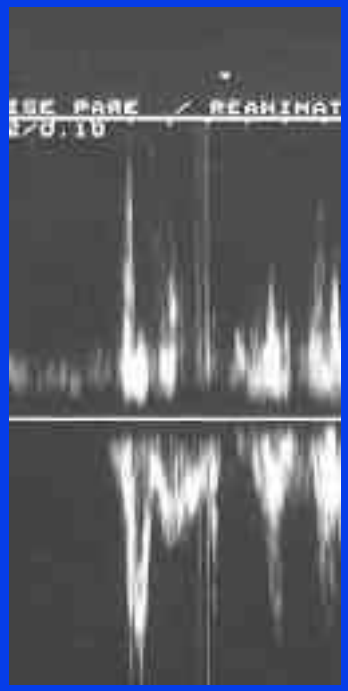
H12

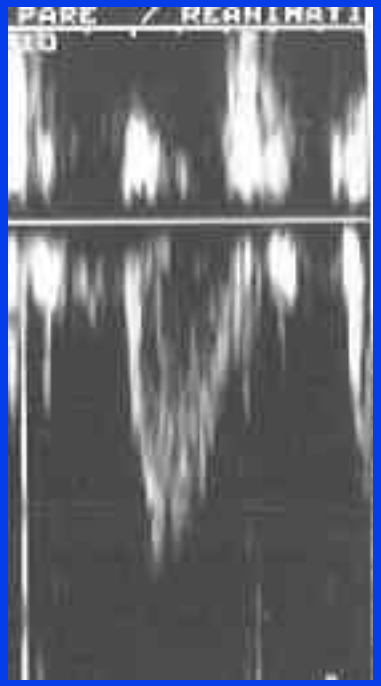


Fibrinolyse
Adre 2, NA 2
BE - 11

H+4
Adre 0,5 NA 2

FLUX ARTERIEL
PULMONAIRE





III

ECHOCARDIOGRAPHIE ET VALEUR PRONOSTIQUE

If PE you want to detect,
And ECHO is what you select,
Why did you not plan
CT or lung scan
To prove there's a blood flow defect?
Once diagnosis is secure,
The ECHO itself is no cure.
For prognostication,
Risk stratification,
ECHO can guide treatment for sure!
You're still hesitating, I see.
Not certain about the RV?
For more precise measure
Than simply blood pressure,
Just say "ECHOCARDIOGRAPHY."

Samuel Z. Goldhaber, MD, FCCP
Harvard Medical School
Boston, MA

Chest 2000

THROMBUS OD ET MORTALITE

- **Rare: 10%des cas**

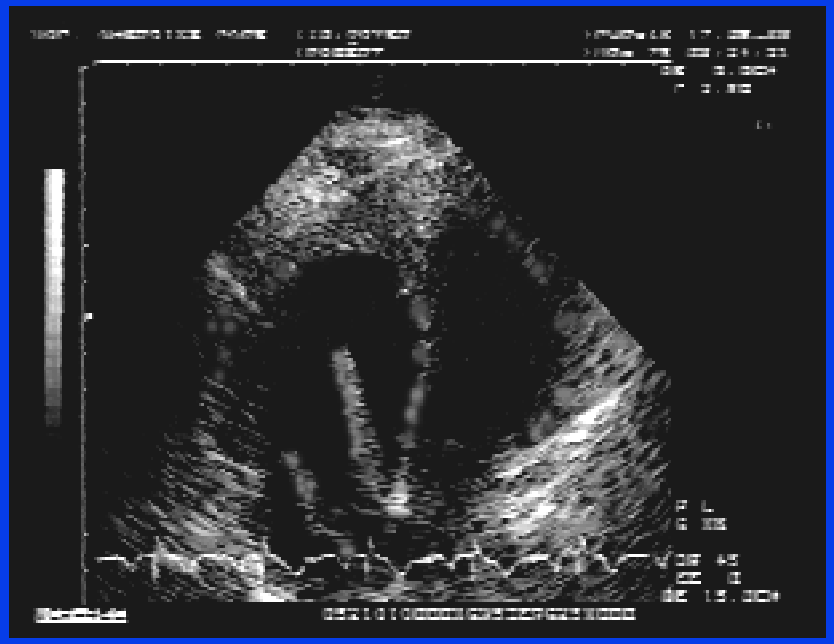
- **Hunter, Chest 1991, n = 83**
  - **Mortalité: 35% => traitement « agressif »**

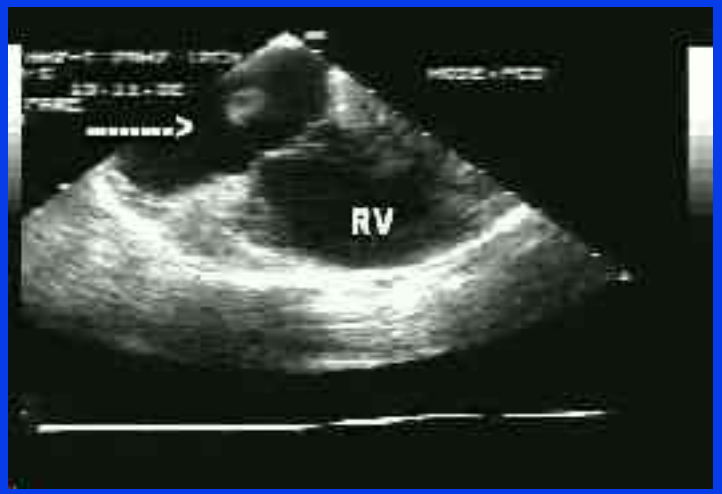
- **Étude RAMT,** Torbicki *EuroEcho* 1997

%	Heparine	Thrombolyse	Chirurgie
Choc	80 % (8/10)	53 % (8/15)	0 (0/7)
Non choc	14 % (3/21)	36 % (4/11)	8 (1/12)
	35 % (31)	**46 % (26)**	**5 % (19)**

- Chartier: **62,5% (5/8)** **22% (2/9)** **47% (8/17)**

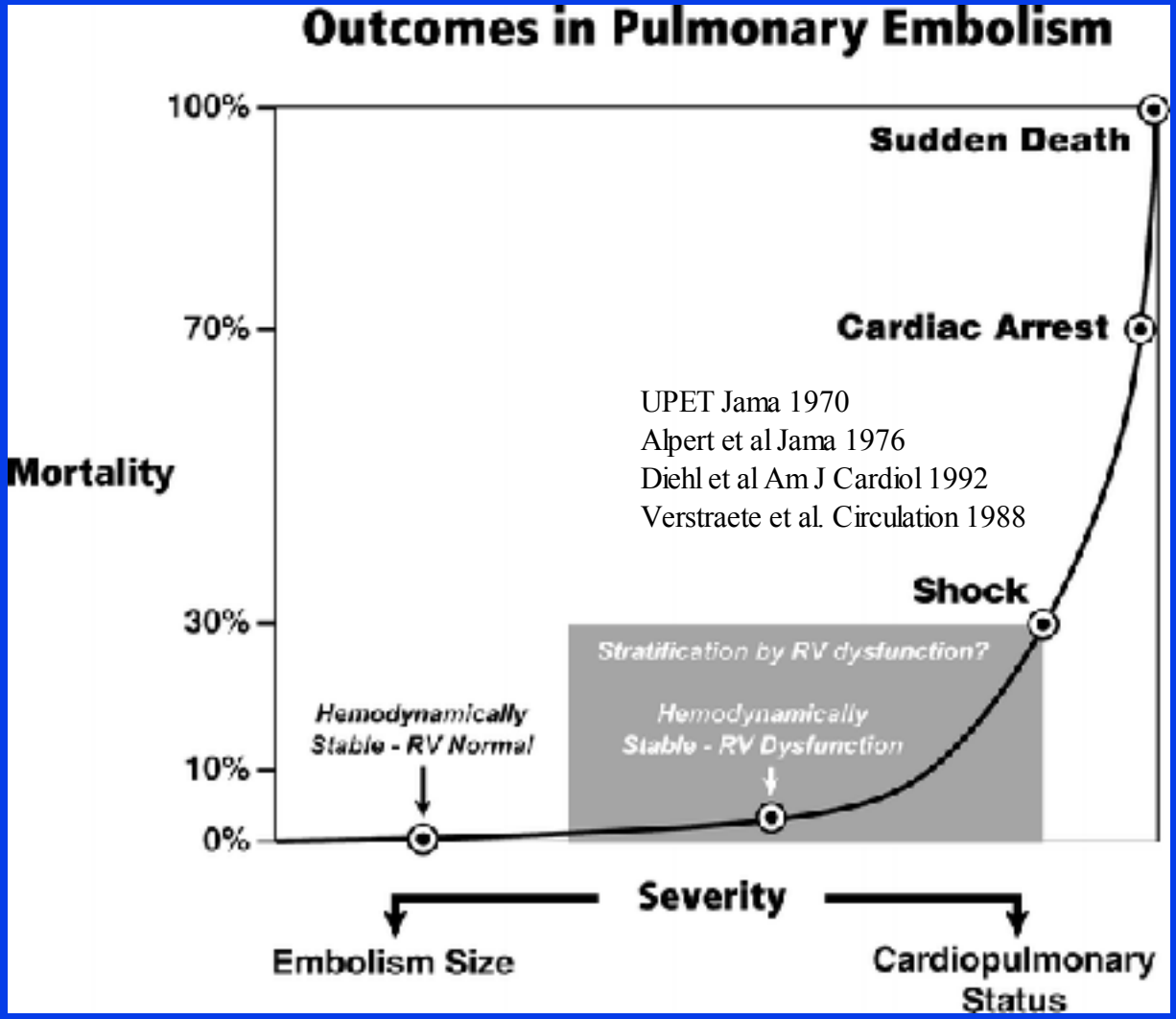
Circulation 1999



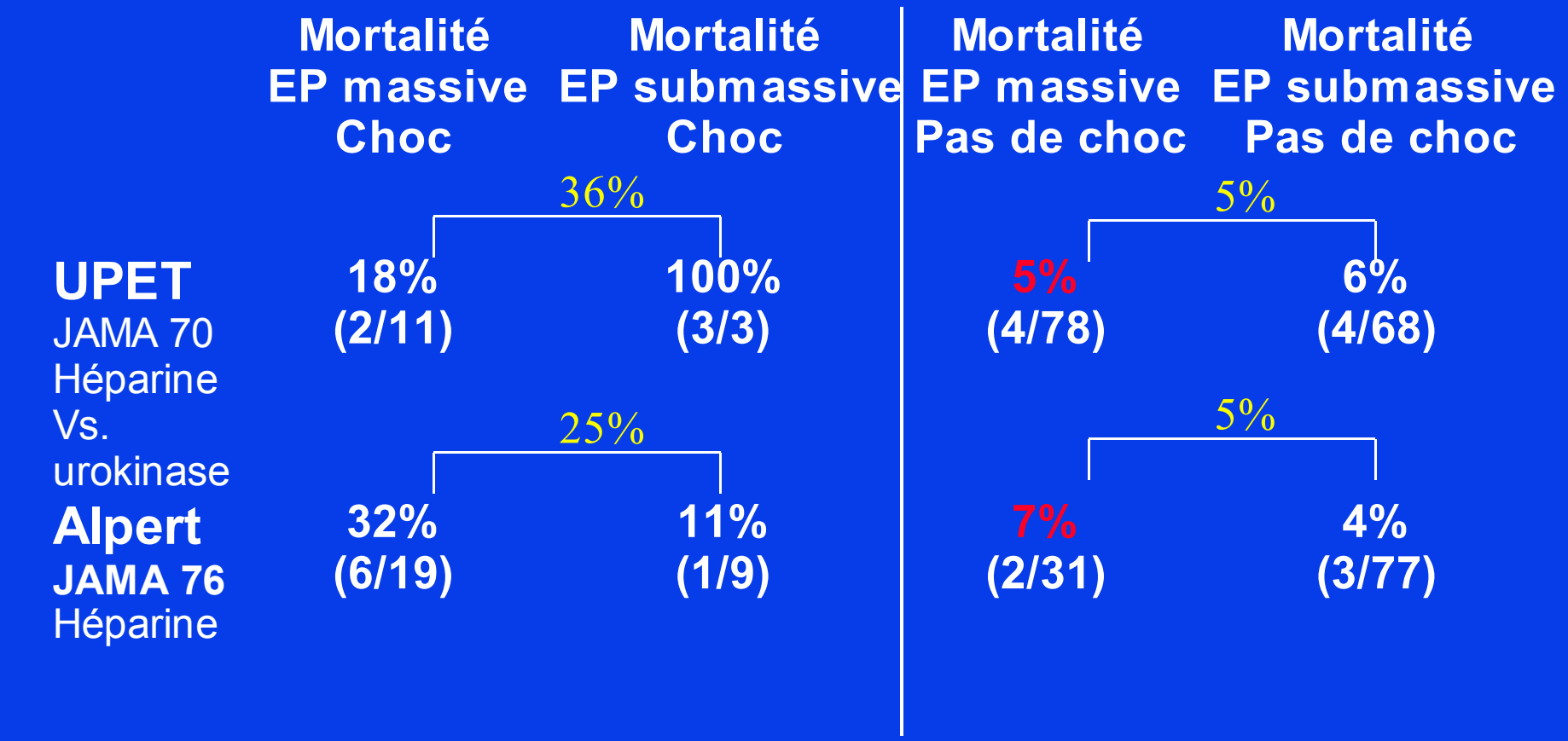

RV

DILATATION VD ET MORTALITE

DYSFONCTION VD



Wood ICM 2002


Mortalité EP massive Choc
Mortalité EP submassive Choc
Mortalité EP massive Pas de choc
Mortalité EP submassive Pas de choc
UPET
JAMA 70
Héparine
Vs.
urokinase
36%
18% (2/11)
100% (3/3)
5%
5% (4/78)
6% (4/68)
Alpert
JAMA 76
Héparine
25%
32% (6/19)
11% (1/9)
5%
7% (2/31)
4% (3/77)

ICOPER

International Cooperative Pulmonary Embolism Registry (Lancet 1999)

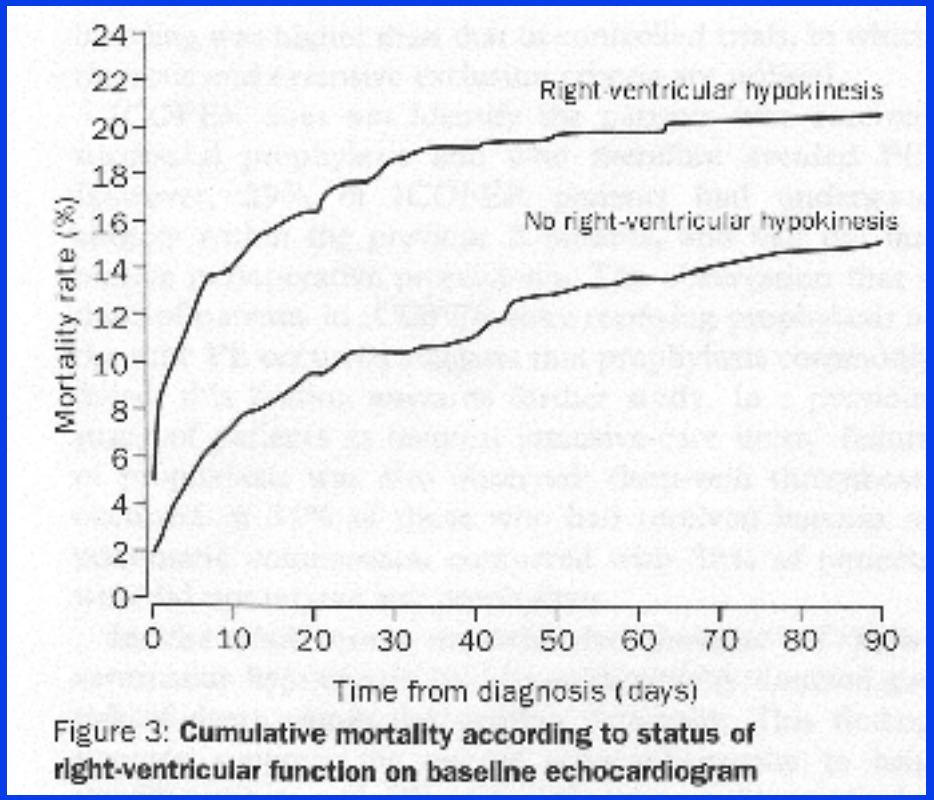


Figure 3: **Cumulative mortality according to status of right-ventricular function on baseline echocardiogram**

- **Analyse multivariée facteurs prédictifs de mortalité**
  - **Age > 70 ans**
  - **Cancer**
  - **IC congestive**
  - **BPCO**
  - **PAS < 90 mm Hg**
  - **RR < 20/mn**
  - **Hypokinésie VD**

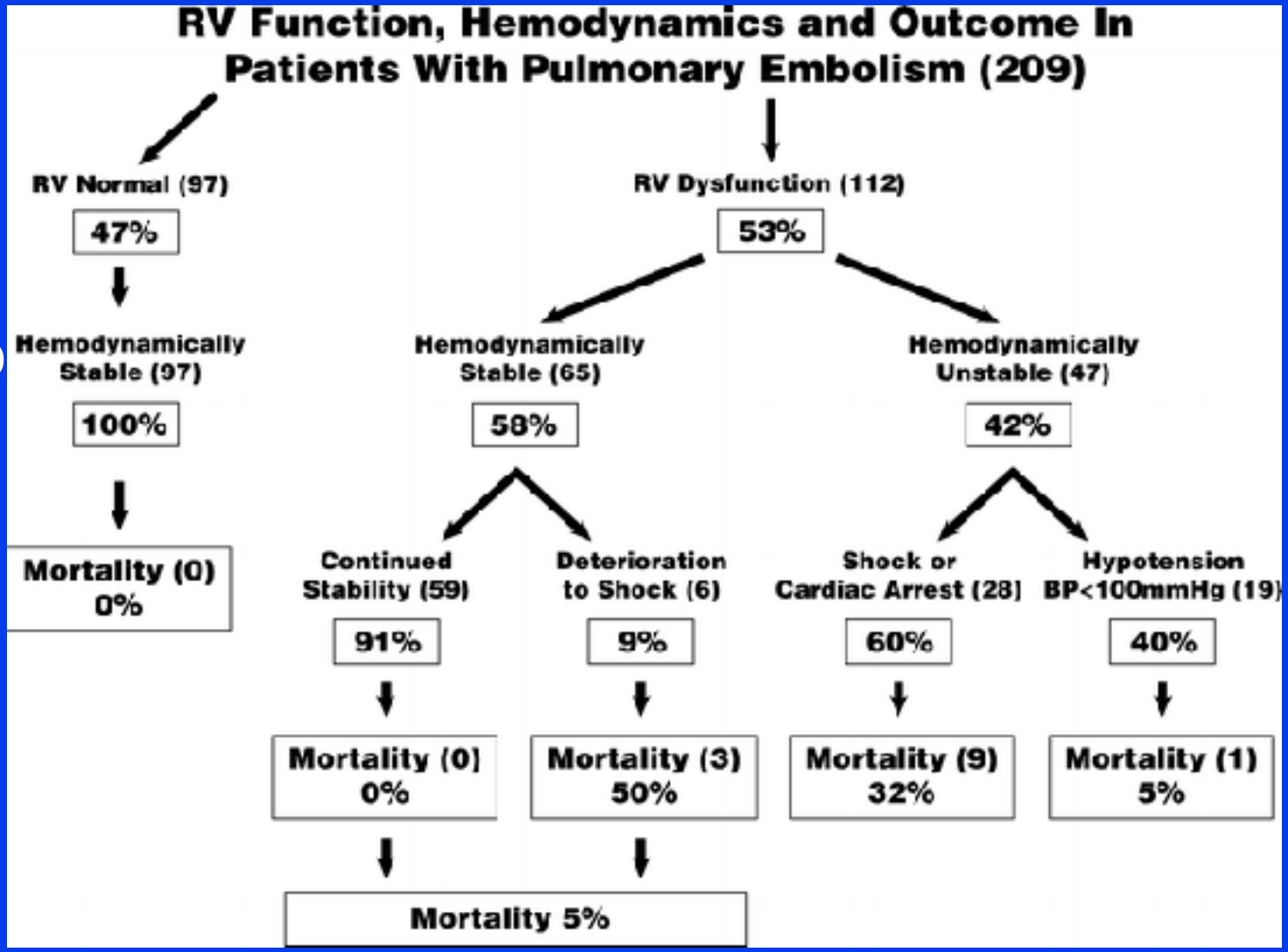
MAPPET

- EP massive sans hypoTA (n = 719)
- Mortalité globale à J30: 9.6%
  - » Dilatation VD: 10%
  - » No RV dilatation: 4.1%
    - p = 0.018
  - » 4.7% qd fibrinolyse
  - » 11.1% qd héparine seule
    - p = 0.016

- Mais,
  - Etude de registre
  - En analyse multivariée, la dilatation du VD n'est pas associée à la mortalité
    - » Syncope, hypoTA, ATCD cardio-pulmonaires
  - 27% des patients n'avaient pas une confirmation diagnostique d'EP

Konstantinides Circulation 1997

Grifoni
Circulation 2000



Dilatation VD (A4CV: EDD > 30 mm, RV/LVEDD > 1), SIV paradoxal, HTAP (Tacc < 90 ms, RV/OD gradient > 30 mmHg), en l'absence d'une hypertrophie du VD (> 7 mm)

- **128 EP massives**
  - **Critères d'inclusion**
    - » **Miller index > 60%**
    - » **Score d'obstruction pulmonaire (scinti) >40%**
    - » **Dilatation VD**
      - **(RV/LVEDD > 0.6)**
  - **Critères d'exclusion**
    - » **PAS < 90 mmHg**
    - » **Signes de choc**
    - » **Inotropes**

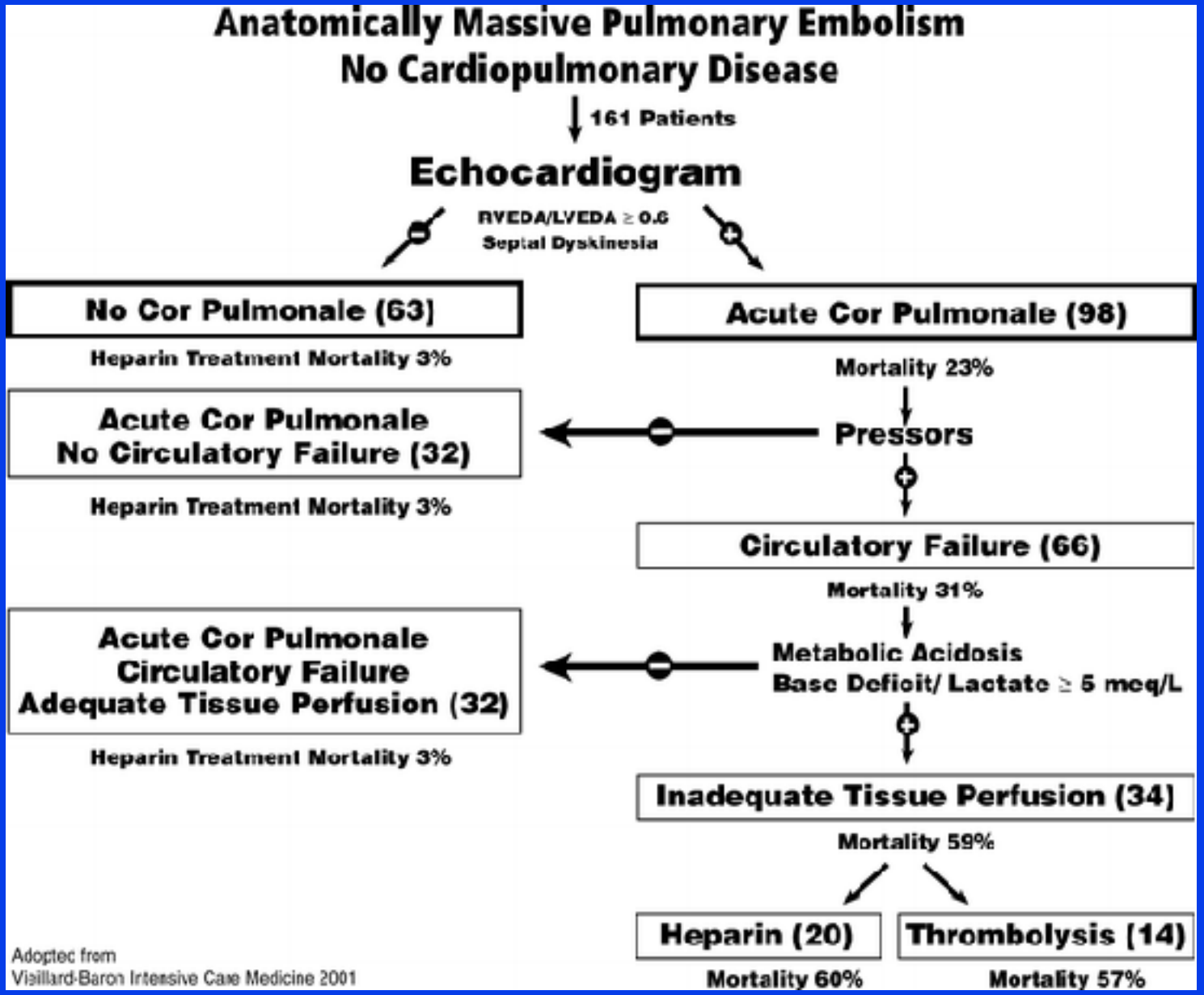
Table 2—*In-hospital Results

Results	Group 1 (n = 64)	Group 2 (n = 64)	p Value
Recurrent PE	3 (4.7)	3 (4.7)	1
Mortality	4 (6.25)	0	0.12
Bleedings	10 (15.6)	0	0.001
Severe	6 (9.4)	0	0.028
Intracranial	3 (4.7)	0	0.24

*Data are presented as No. (%).

Hamel Chest 2001

Mortalité globale = 3%


Anatomically Massive Pulmonary Embolism
No Cardiopulmonary Disease
161 Patients
Echocardiogram
RVEDA/LVEDA ≥ 0.6
Septal Dyskinesia
No Cor Pulmonale (63)
Heparin Treatment Mortality 3%
Acute Cor Pulmonale (98)
Mortality 23%
Pressors
Acute Cor Pulmonale
No Circulatory Failure (32)
Heparin Treatment Mortality 3%
Circulatory Failure (66)
Mortality 31%
Metabolic Acidosis
Base Deficit/ Lactate ≥ 5 meq/L
Acute Cor Pulmonale
Circulatory Failure
Adequate Tissue Perfusion (32)
Heparin Treatment Mortality 3%
Inadequate Tissue Perfusion (34)
Mortality 59%
Heparin (20)
Mortality 60%
Thrombolysis (14)
Mortality 57%
Adopted from
Visillard-Baron Intensive Care Medicine 2001

FACTEURS PREDICTIFS MORTALITE

	Vivants	Décédés	Univariée	Multivariée	OR
Age	61±15	75 ±14	0,0002	NS	
FC	100±15	110±20	NS		
IC(%)	59	96	0,001	NS	
STDVD/VG	1,1±0,3	1,6±0,5	0,0001	NS	
Acidose (%)	24	91	$2,9^{E-12}$	0,04	$1,8^{E6}$

Vieillard-Baron ICM 2001

CONCLUSION

- L ’échocardiographie permet une prise en charge diagnostique optimale influençant sans doute le pronostic des malades

- Par contre, en dehors de la visualisation d’un thrombus dans les cavités cardiaques droites, elle ne permet pas de sélectionner les malades qui pourraient bénéficier d ’une fibrinolyse