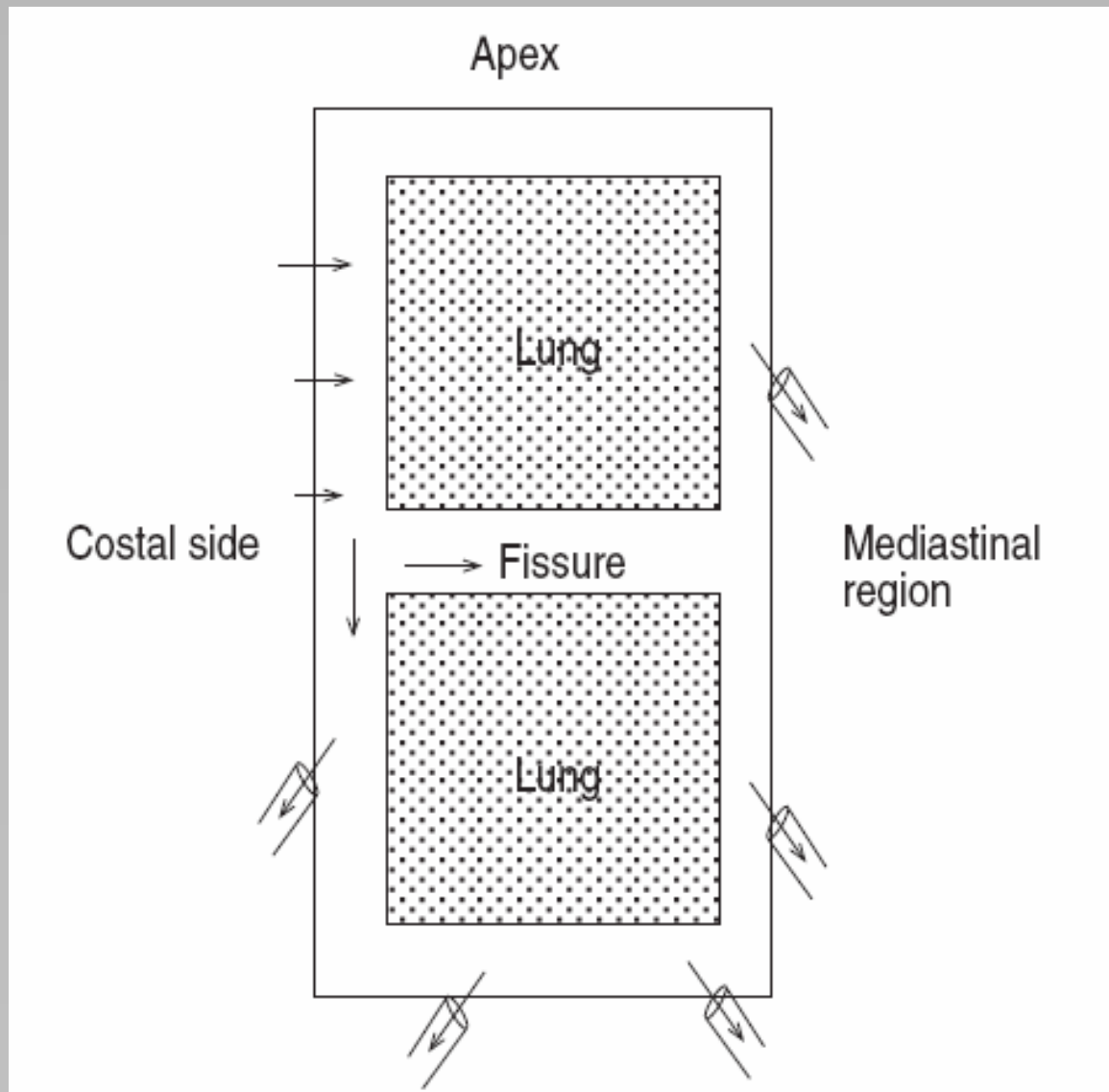


Echographie et épanchements pleuraux en réanimation

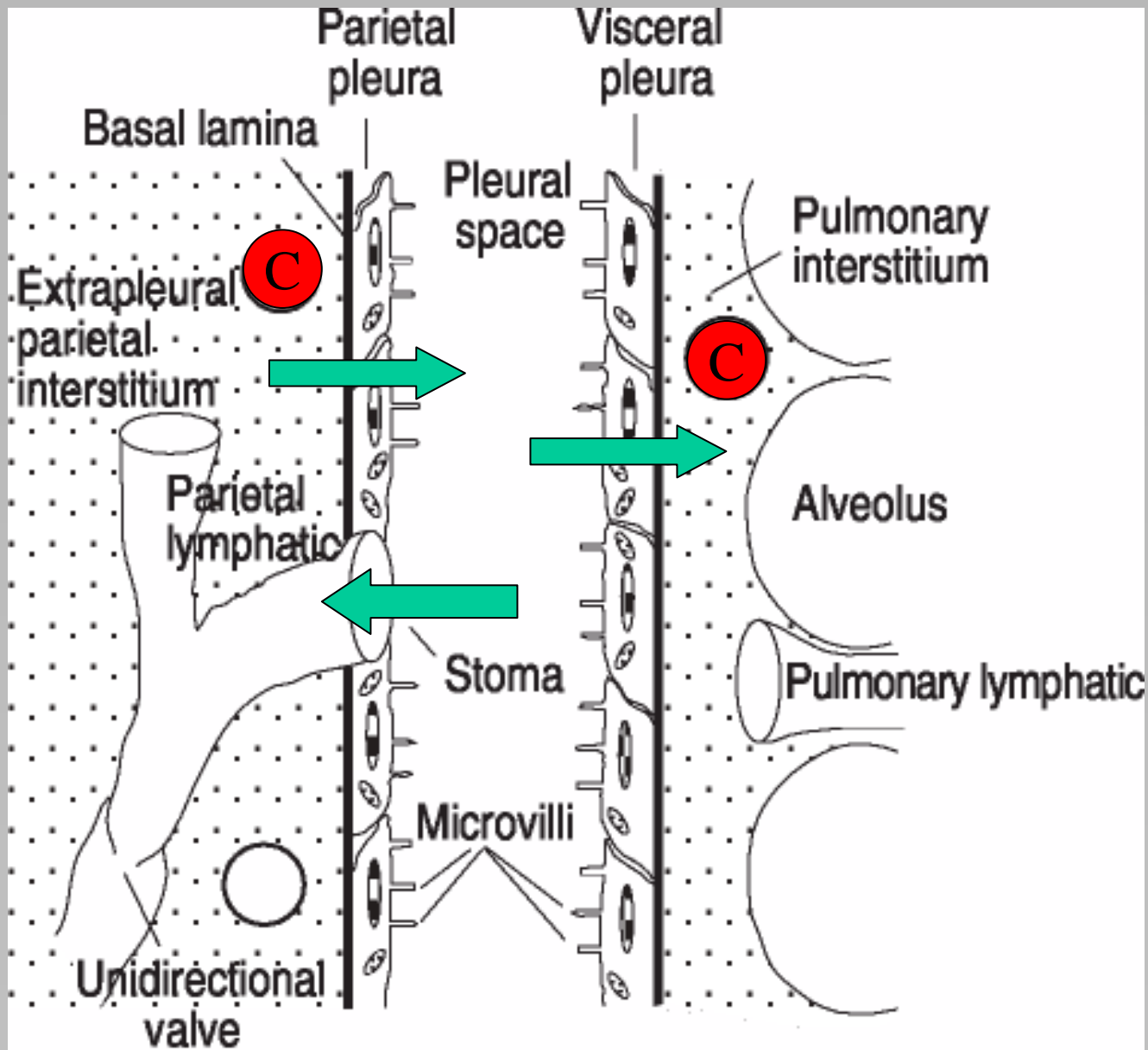
Dr Antoine Roch
Réanimation Médicale
Marseille

- Incidence en réa médicale = 62%
- Petite taille dans 92% des cas
- Facteurs de risque:
 - Age
 - Albuminémie
 - APACHE II
 - Durée de séjour et ventilation

Mattison et coll. Chest 97



Miserochi G ERJ 97
Zocchi I ERJ 2002



Miserrochi G ERJ 97, Zocchi L ERJ 2002

Causes of Pleural Effusion	No. of Patients (%)	Laterality of Effusions (n=62)		
		Bilateral	Left	Right
Heart failure	22 (35)	18	3	1
Atelectasis	14 (23)	4	9	1
Uncomplicated parapneumonic effusion	7 (11)	4	1	2
Hepatic hydrothorax	5 (8)	0	2	3
Hypoalbuminemia	5 (8)	5	0	0
Malignancy	2 (3)	0	1	1
Pancreatitis	1 (2)	0	0	1
EVCN	1 (2)	0	0	1
Uremic pleurisy	1 (2)	0	0	1
Empyema	1 (2)	1	0	0
Unknown	3 (5)	1	0	2

Mattison et coll. Chest 97

Retentissement mécanique

- Expansion thoracique
- ↓ CV et CRF
- ↓ compliance
- déplacement céphalique du poumon

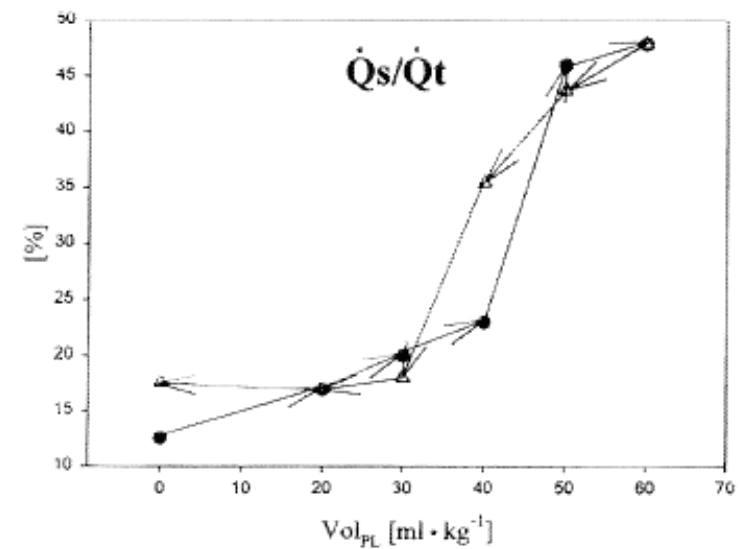
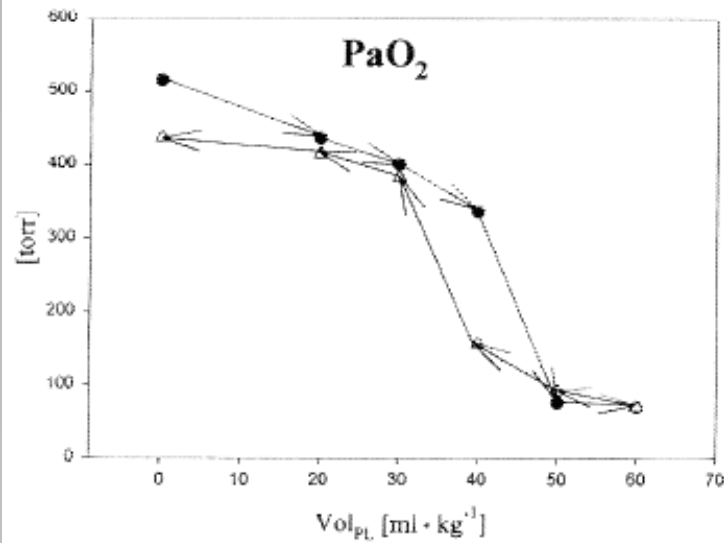
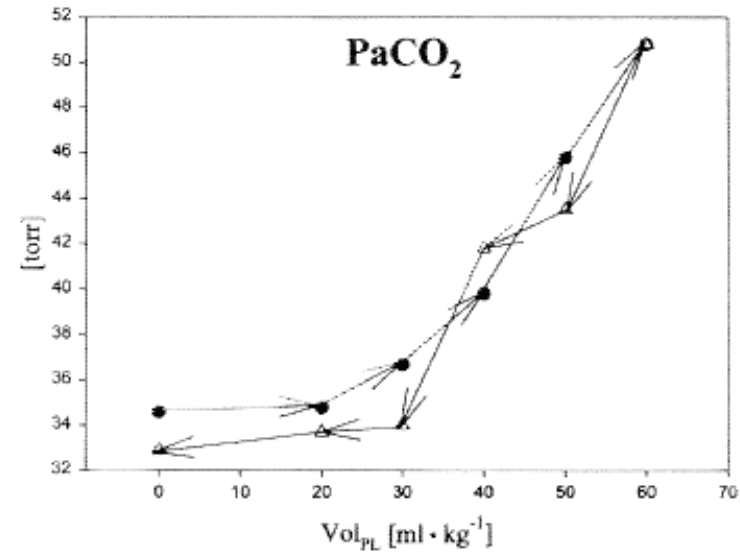
Dechman G ERJ 93, Krell WS JAP 85

- Effet limité du drainage en VS

Light RW ARRD 86

Nishida Crit Care Med 99

- modèle porcin
- épanchement croissant
- bilatéral
- hdm stable



Ventilation-perfusion

9 patients avec épanchement isolé récent

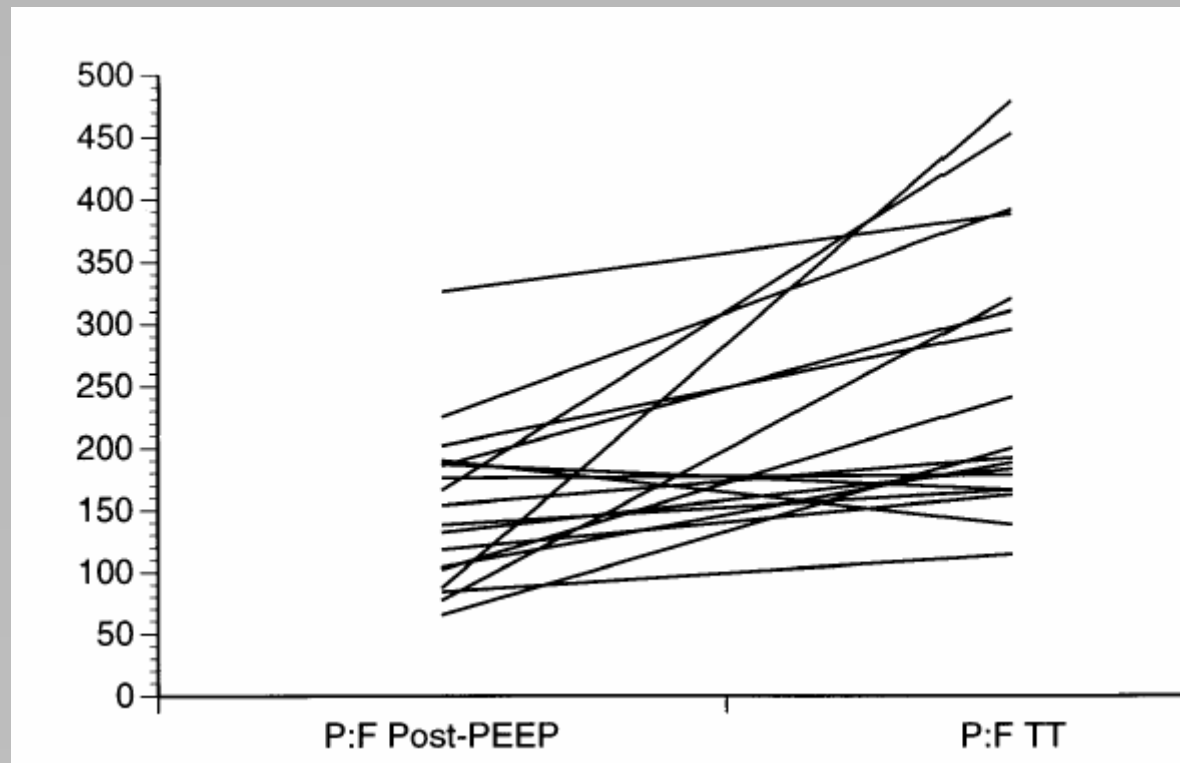
	Mean \pm SD
Age, yr	39 \pm 20
Height, cm	167.6 \pm 13.2
Weight, kg	63.8 \pm 11.2
Duration of symptoms before study, d	7.2 \pm 3.9
FVC, % pred	65.0 \pm 13.1
FEV ₁ , % pred	64.3 \pm 15.3
FEV ₁ /FVC, %	79 \pm 8
D _{LCO} , % pred	69.4 \pm 5.4
Mean pleural pressure before thoracentesis, mm Hg	3.6 \pm 7.7
Mean pleural pressure after thoracentesis, mm Hg	-6.8 \pm 13.0
Drained volume, ml	693 \pm 424
Drainage flow, ml/min	153 \pm 96
Shunt, % cardiac output	6.9 \pm 6.7
Low \dot{V}_A/\dot{Q} , % \dot{Q}	1.4 \pm 2.2
High \dot{V}_A/\dot{Q} , % \dot{V}_A	0.0 \pm 0.0
Dead space, % \dot{V}_A	27 \pm 12
Mean Q	0.91 \pm 0.18
Mean V	1.31 \pm 0.26
Log _{SD} Q	0.72 \pm 0.29
Log _{SD} V	0.53 \pm 0.15

Agusti AJRCCM 97

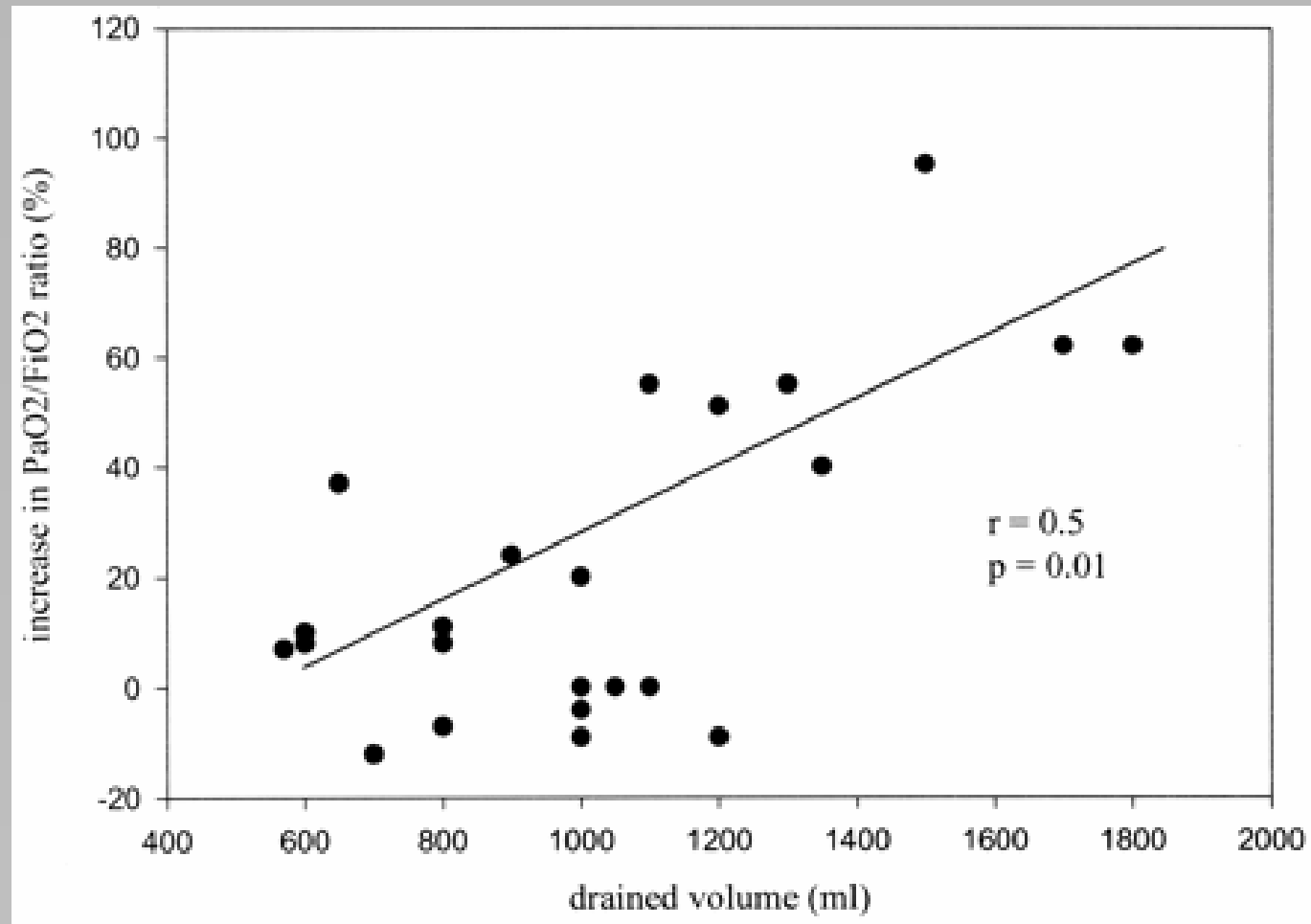
Effets du drainage sur l'hématose en VS

	n	Volume drainé	Délai observation	Augmentation PaO ₂ (mmHg)	Diminution shunt
Perpina 1983	33	-	24h	8±5	6±4 %
Agusti 1997	9	693±424	3h	0	1 %
Wang 1995	21	1610±510	24h	8	-

Talmor M Surgery 98



	<i>Pre-PEEP</i>	<i>Post-PEEP</i>	<i>TT</i>	<i>24 Hours after TT</i>	<i>p Value</i>
PaO ₂	75.8 ± 4.3	124.7 ± 12.2	199.1 ± 26.8*	132.3 ± 14.0	<0.0001
P:F	121.9 ± 9.0	151.0 ± 15.3	253.6 ± 26.5*	244.5 ± 29.1*	<0.0001
P _{AW}	40.8 ± 3.6	44.3 ± 3.2	42.9 ± 4.3	38.2 ± 3.4	0.6865
C _{dyn}	23.4 ± 2.6	27.1 ± 3.5	35.7 ± 4.7	32.9 ± 3.5	0.0818

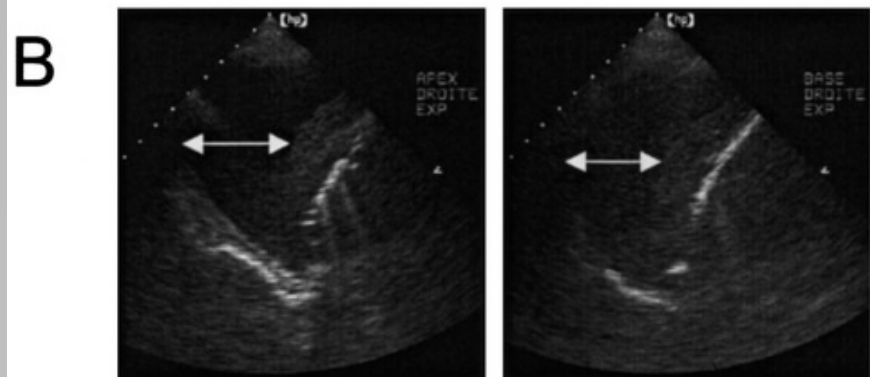
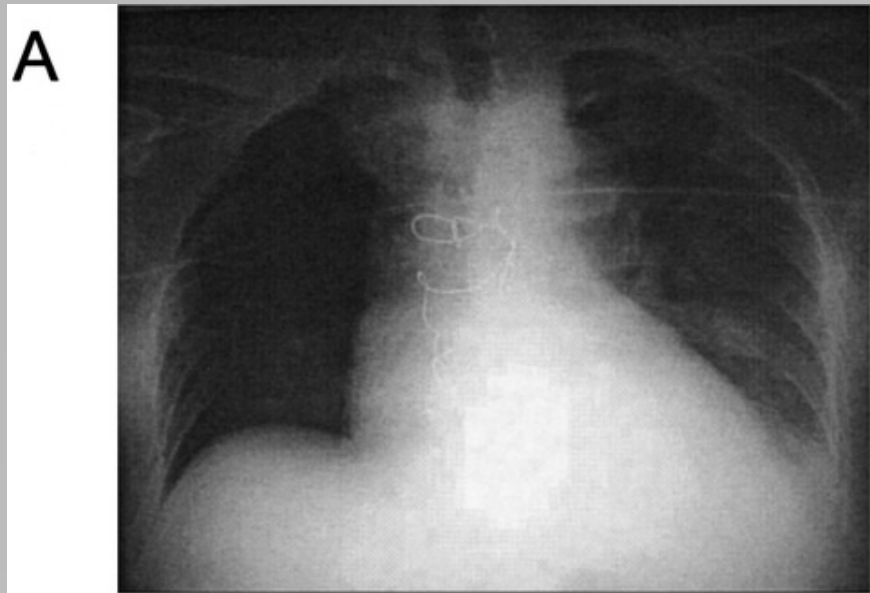


12 h après drainage

Roch et coll. Chest 2005

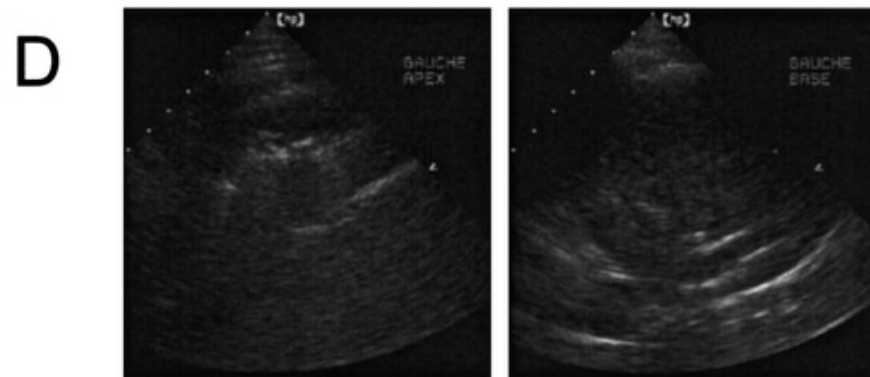
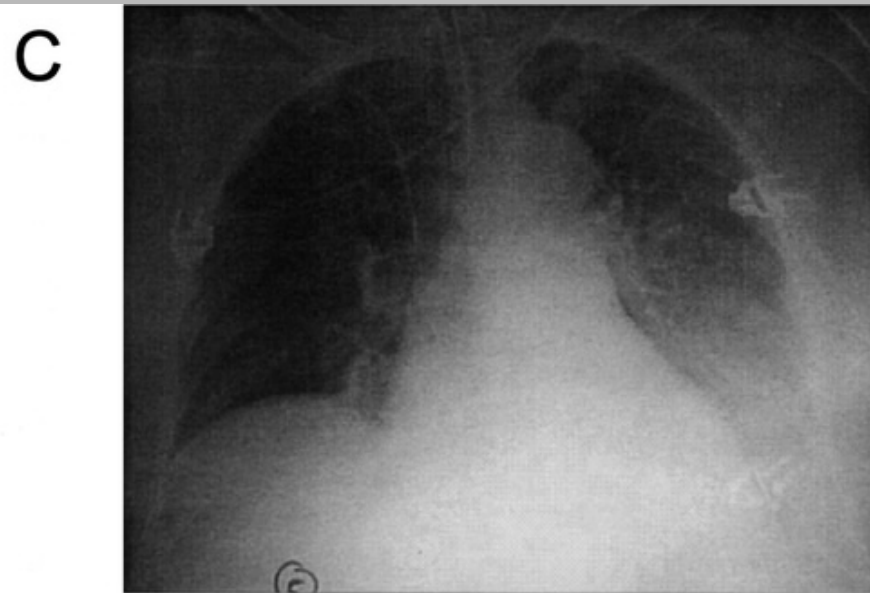
Diagnostic positif





750 ml

900 ml

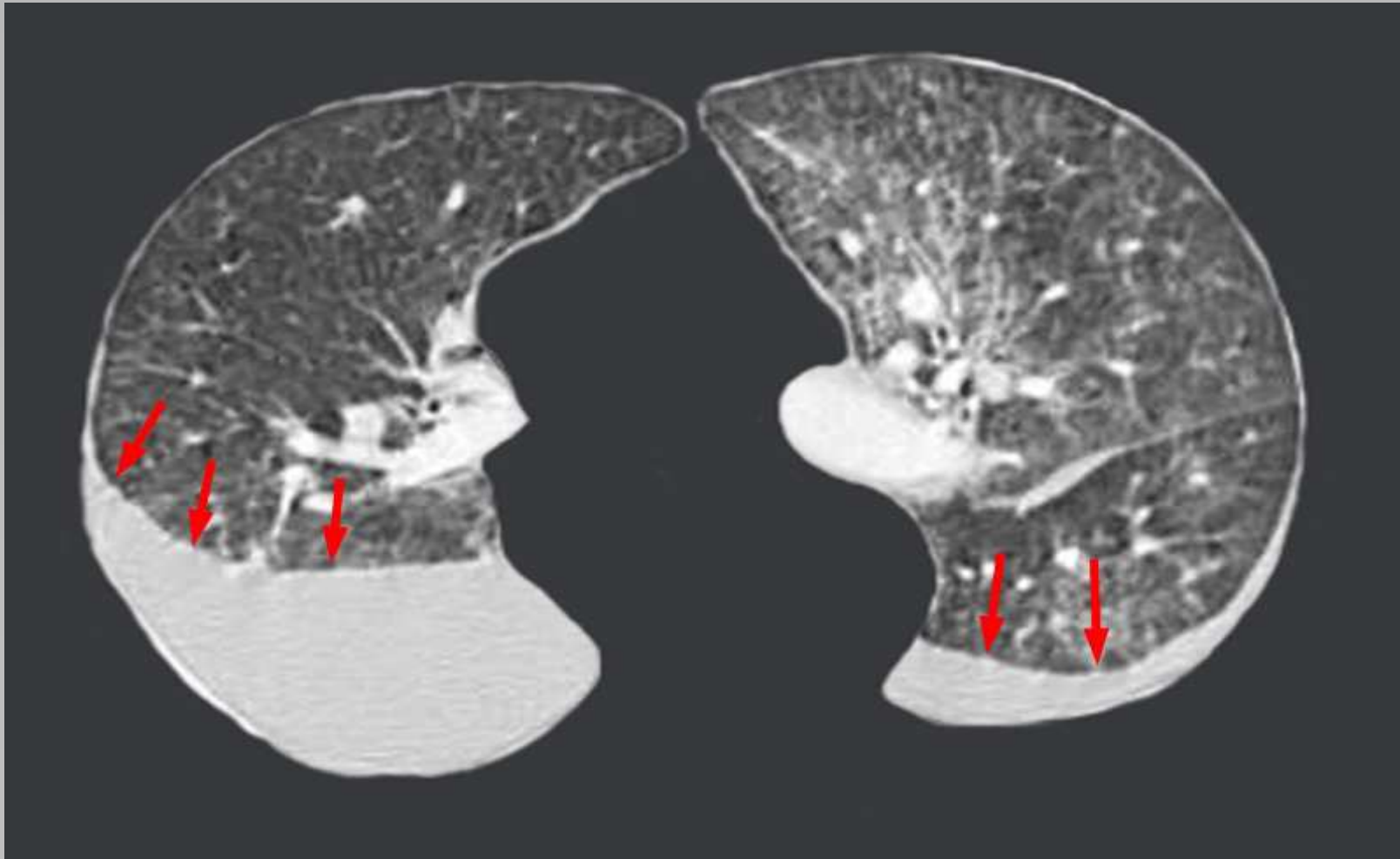


Consolidation

Vignon Crit Care Med 2005

	Auscultation, %	Chest Radiography, %	Lung Ultrasonography, %
Pleural effusion			
Sensitivity	42	39	92
Specificity	90	85	93
Diagnostic accuracy	61	47	93

Lichtenstein D Anesthesiology 2004



Volume (en ml) = $d^2 \times L$ (en cm)

Mergo PJ, J Thoracc Imaging 99

Diagnostic différentiel

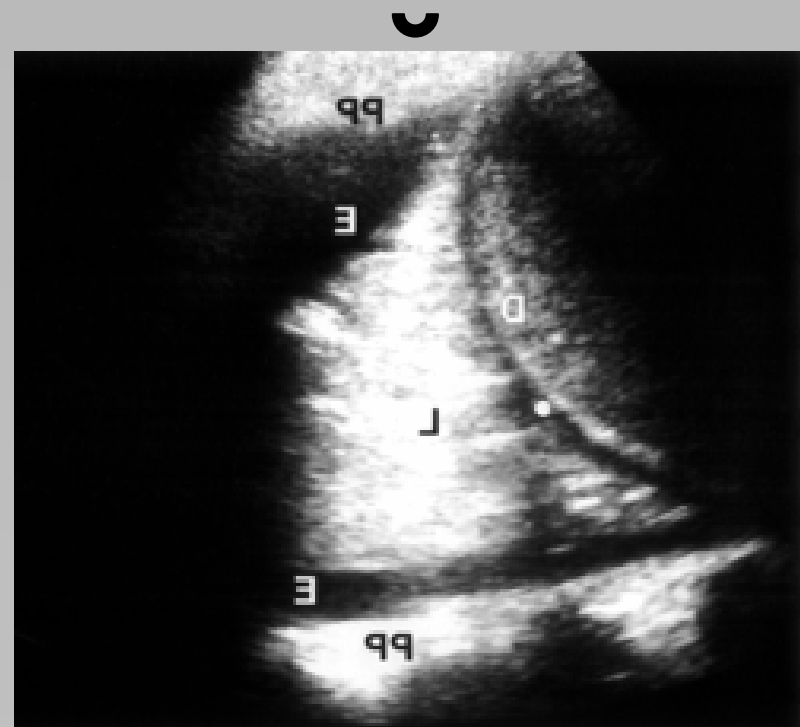
	Auscultation, %	Chest Radiography, %	Lung Ultrasonography, %
Alveolar consolidation			
Sensitivity	8	68	93
Specificity	100	95	100
Diagnostic accuracy	36	75	97
Alveolar–interstitial syndrome			
Sensitivity	34	60	98
Specificity	90	100	88
Diagnostic accuracy	55	72	95

En pratique...





Repérage du diaphragme en coupe longitudinale



salomon,

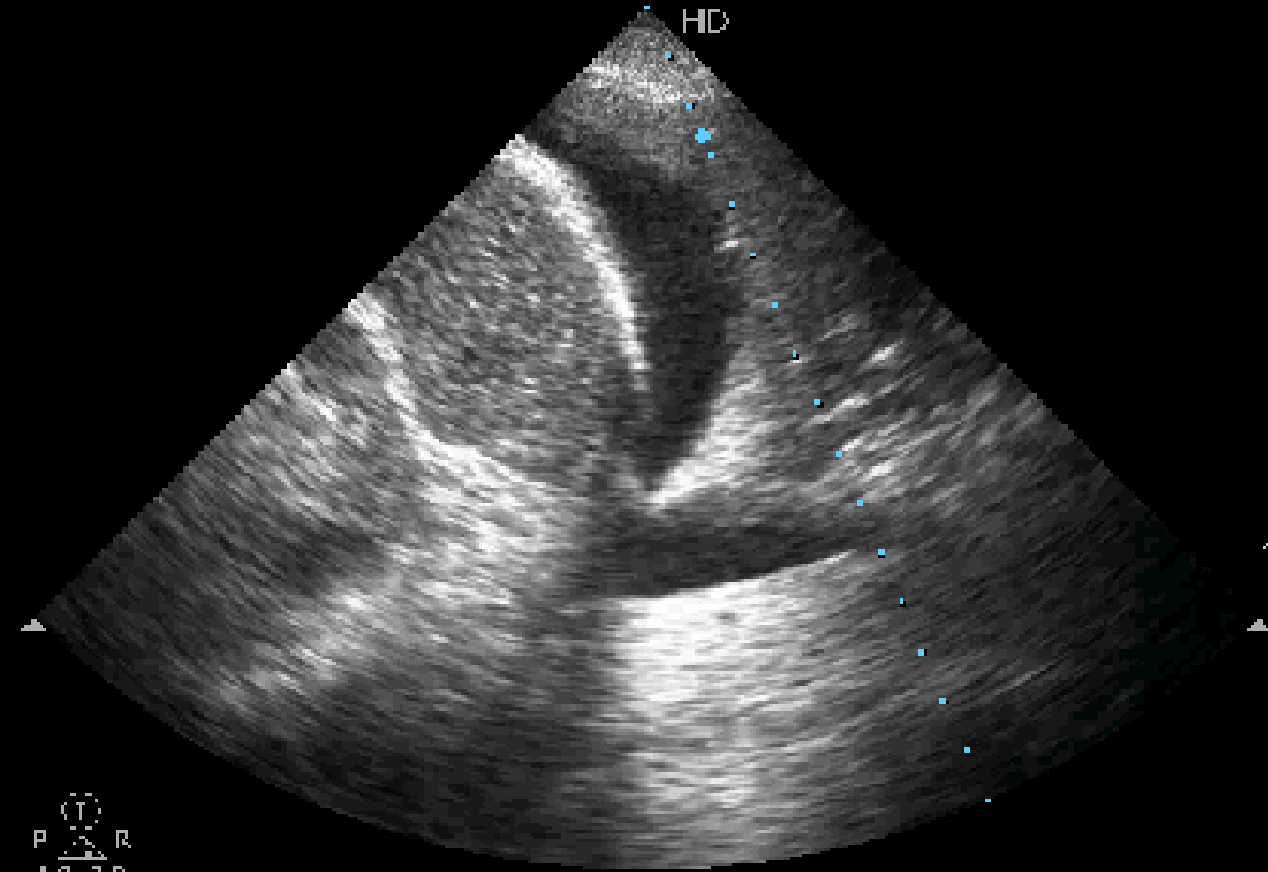
REANIMATION MEDICALE ET POLY

06/03/2006

PHILIPS

17:07:26

HD



- Cardio Ac
S4 2
IM 1,3
-111 1,1

-113 Gn 66
232dB/C3
F/2/2

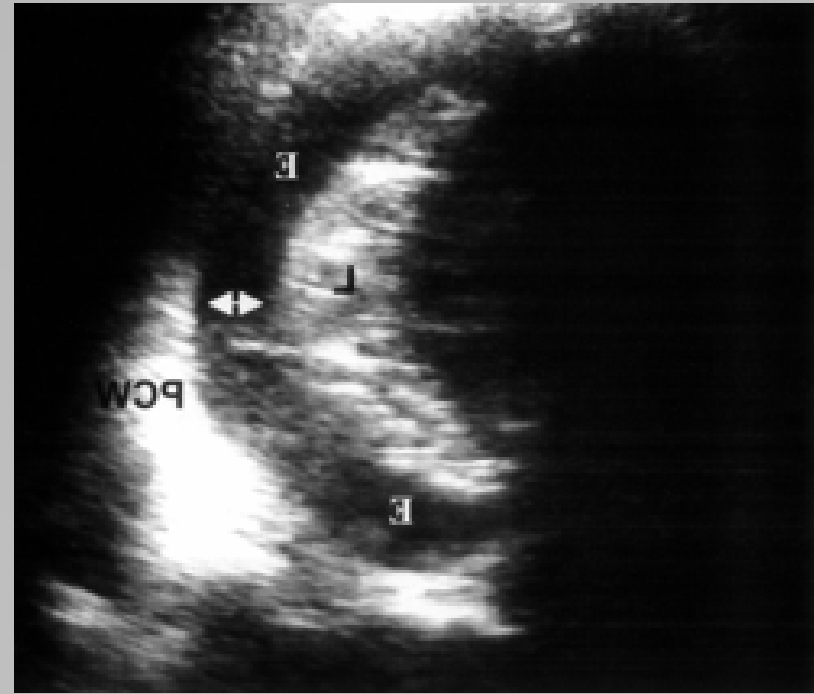
-30112 16cm

P R
1,9 3,0

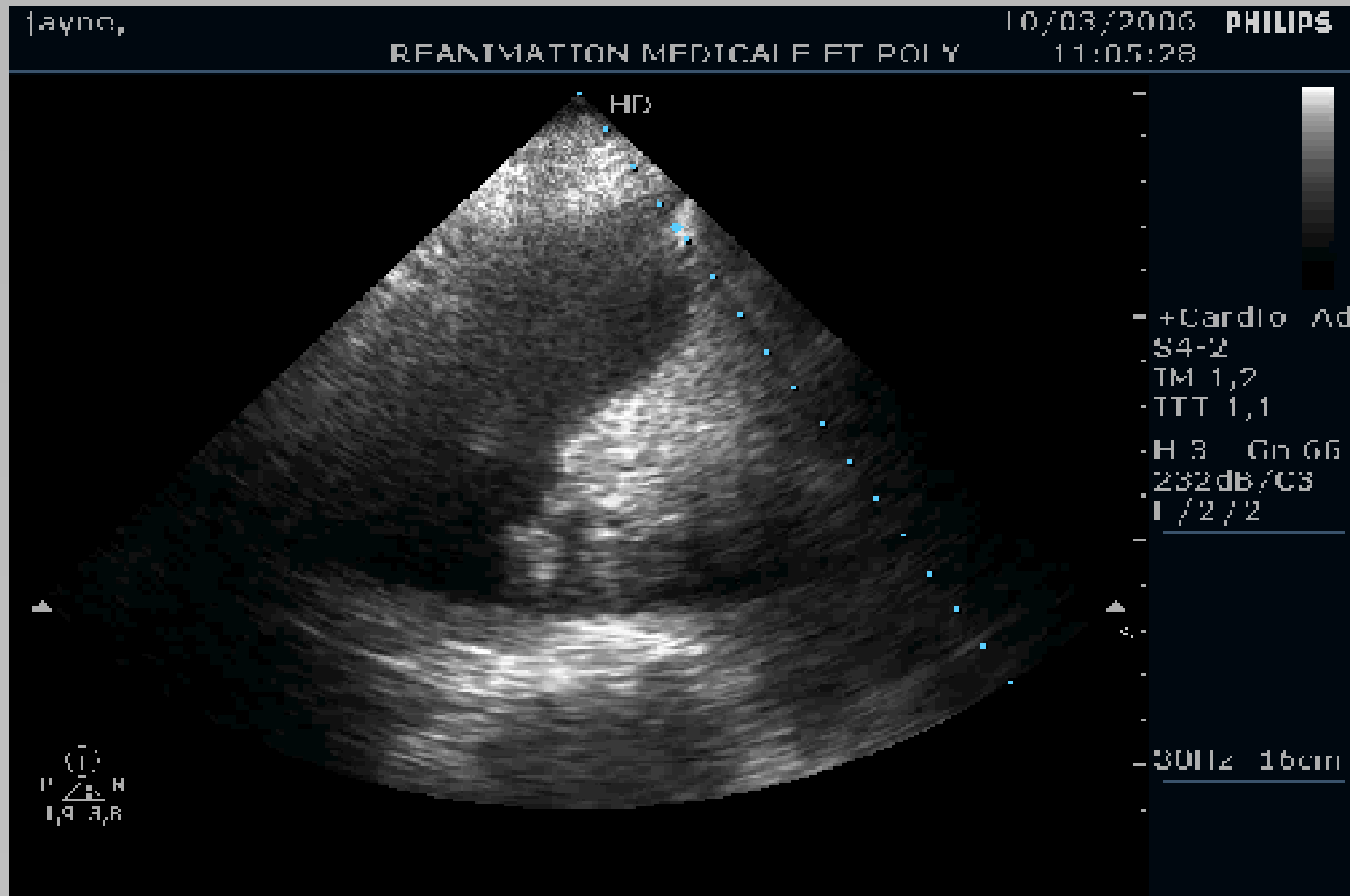
Placement sur base du poumon



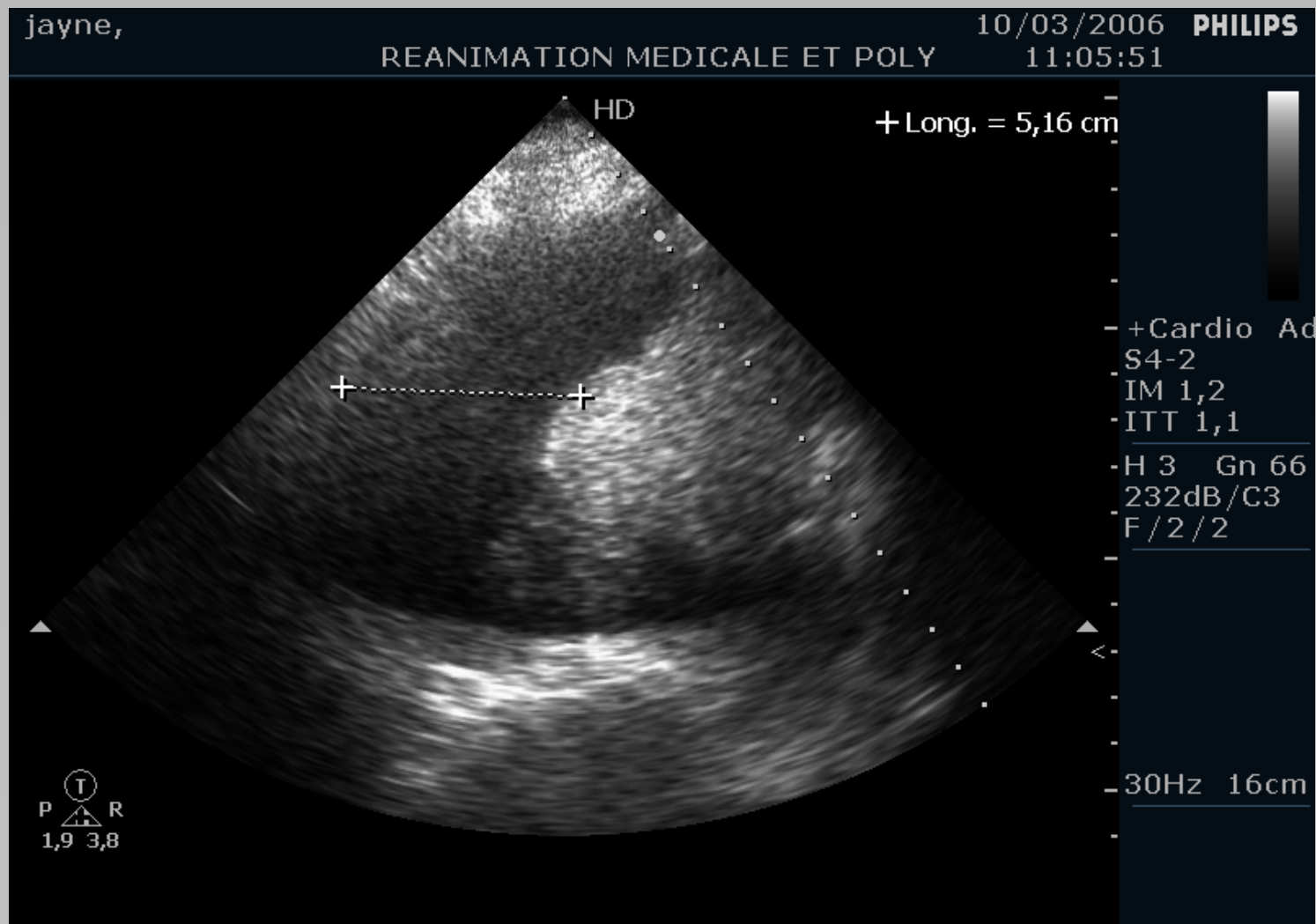
Coupe transversale

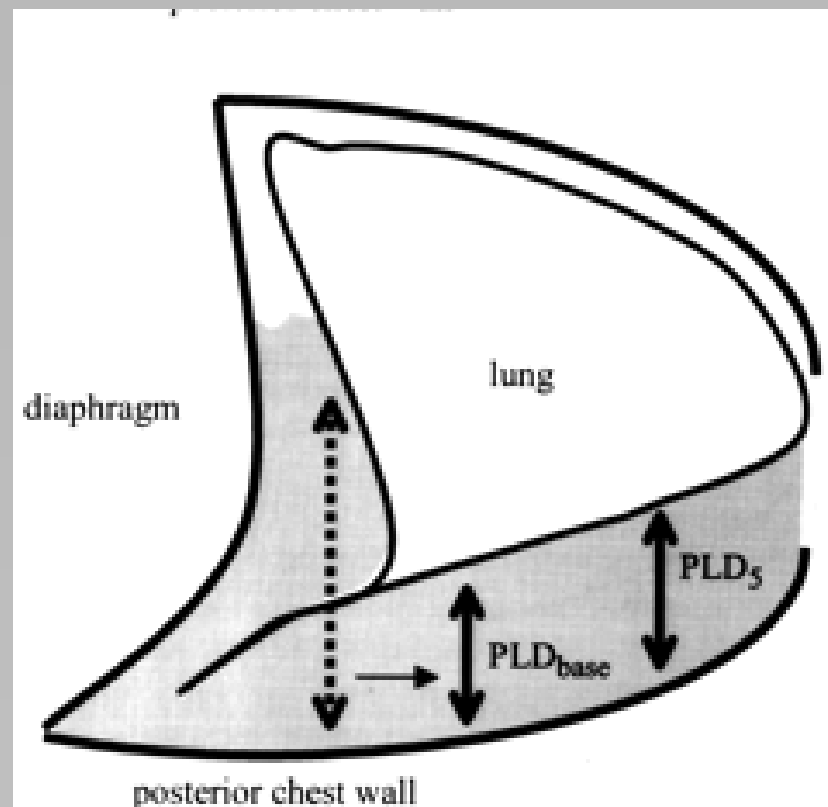
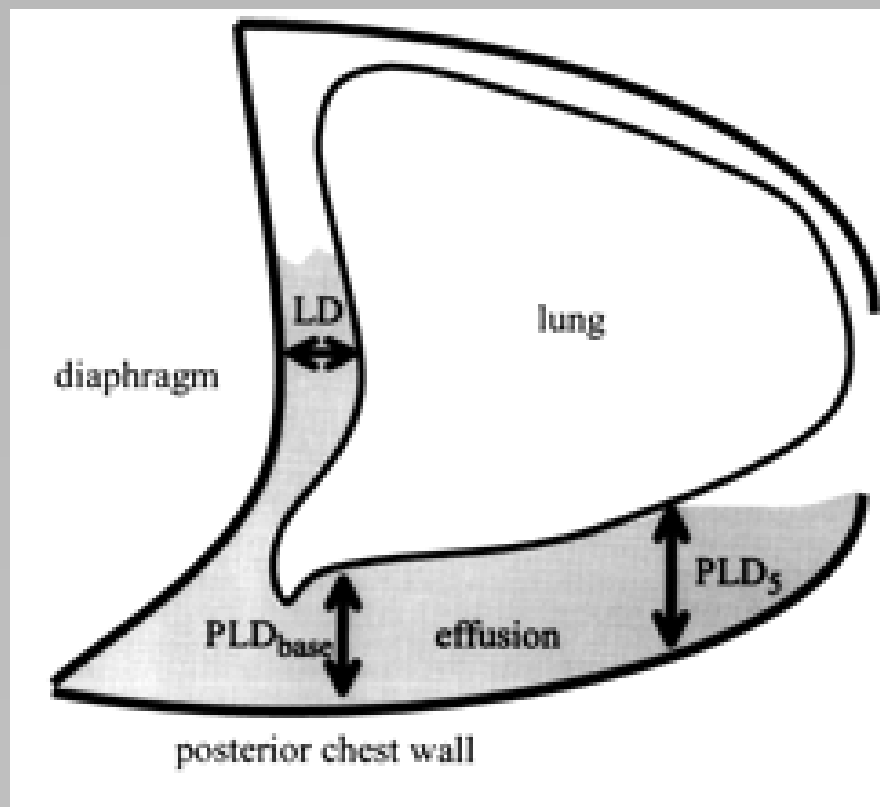


Coupe transversale



Mesure de l'épaisseur max





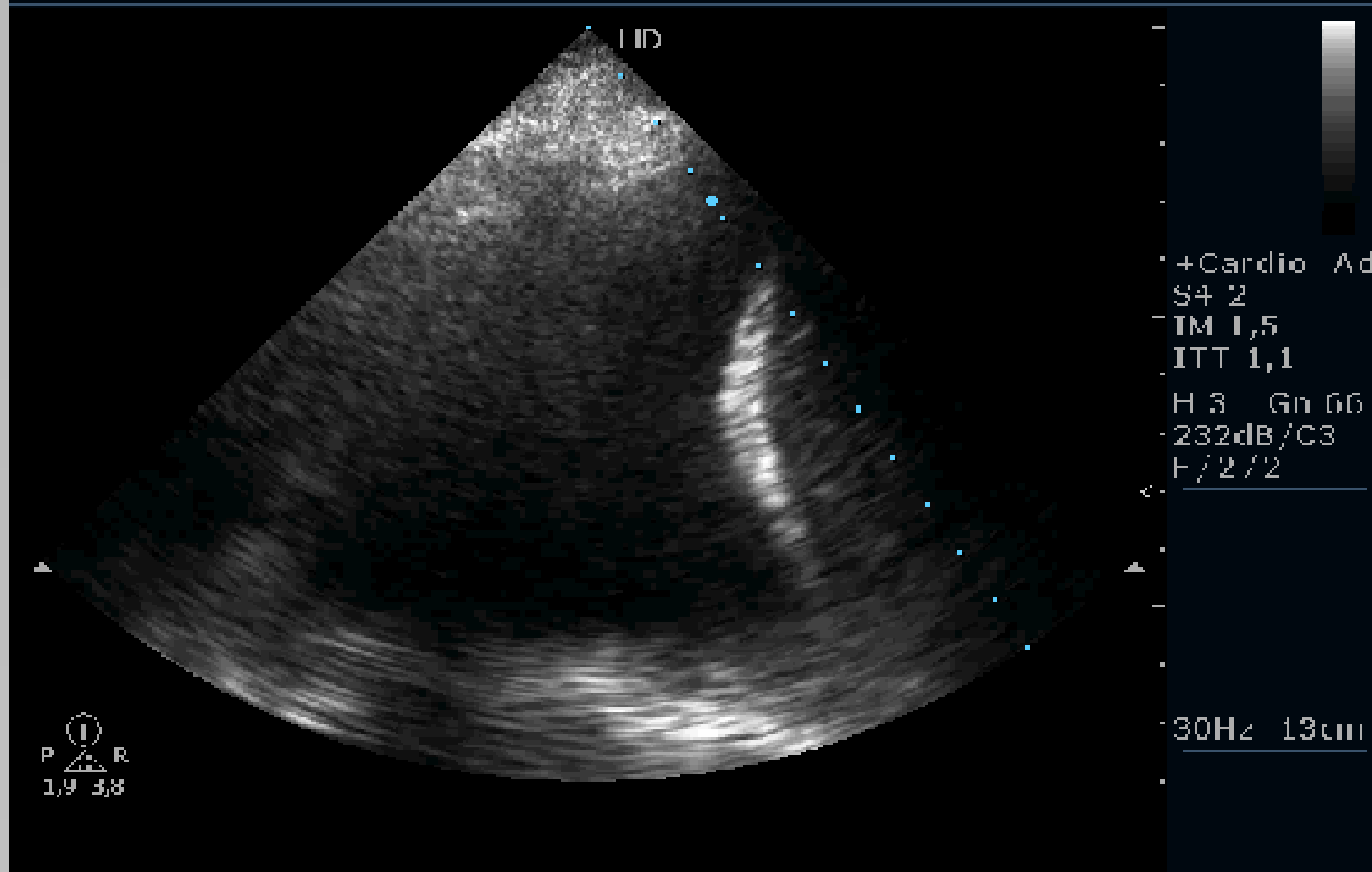
jayne,

REANIMATION MEDICALE ET POLY

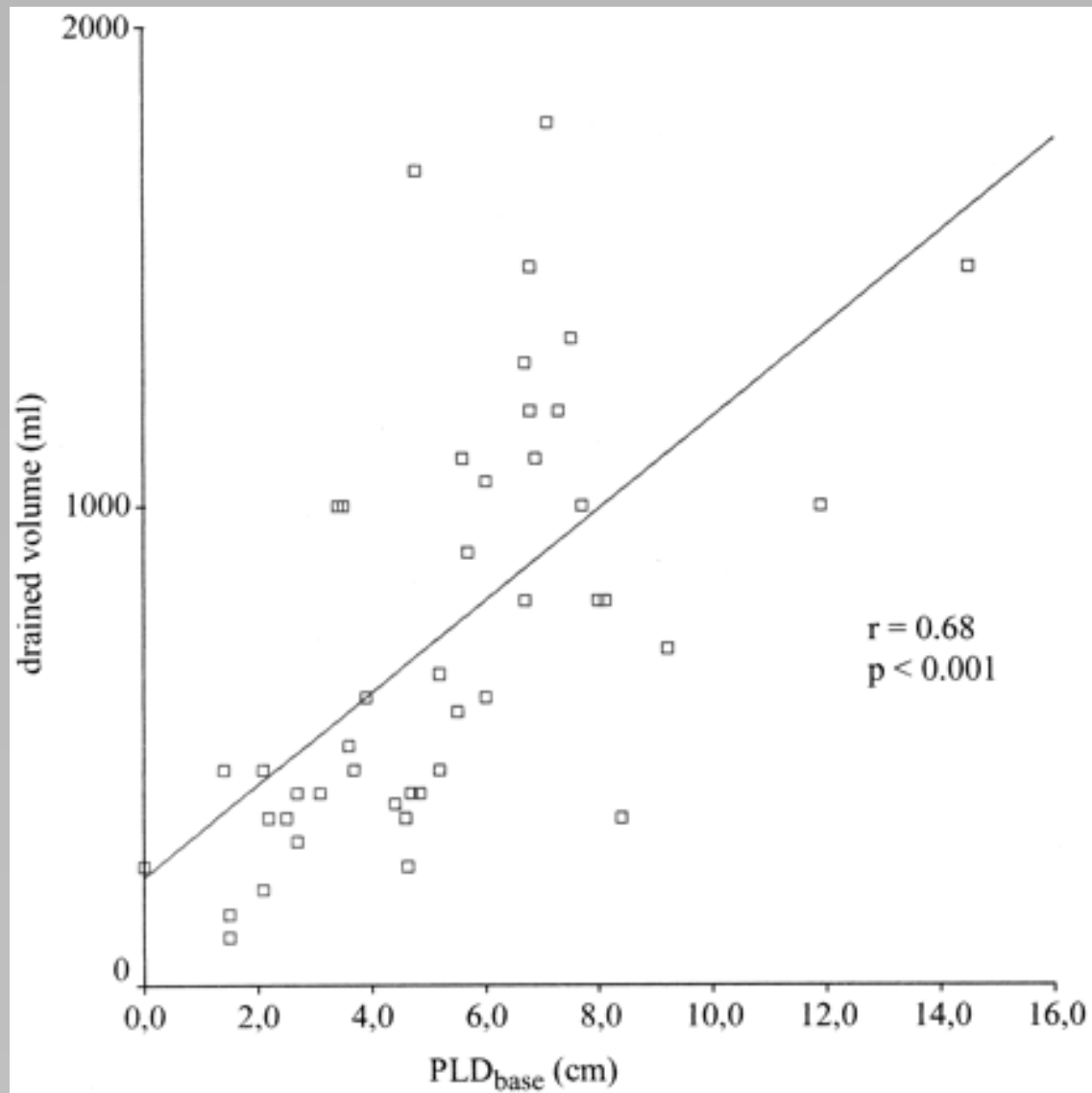
10/03/2006

PHILIPS

11:03:44

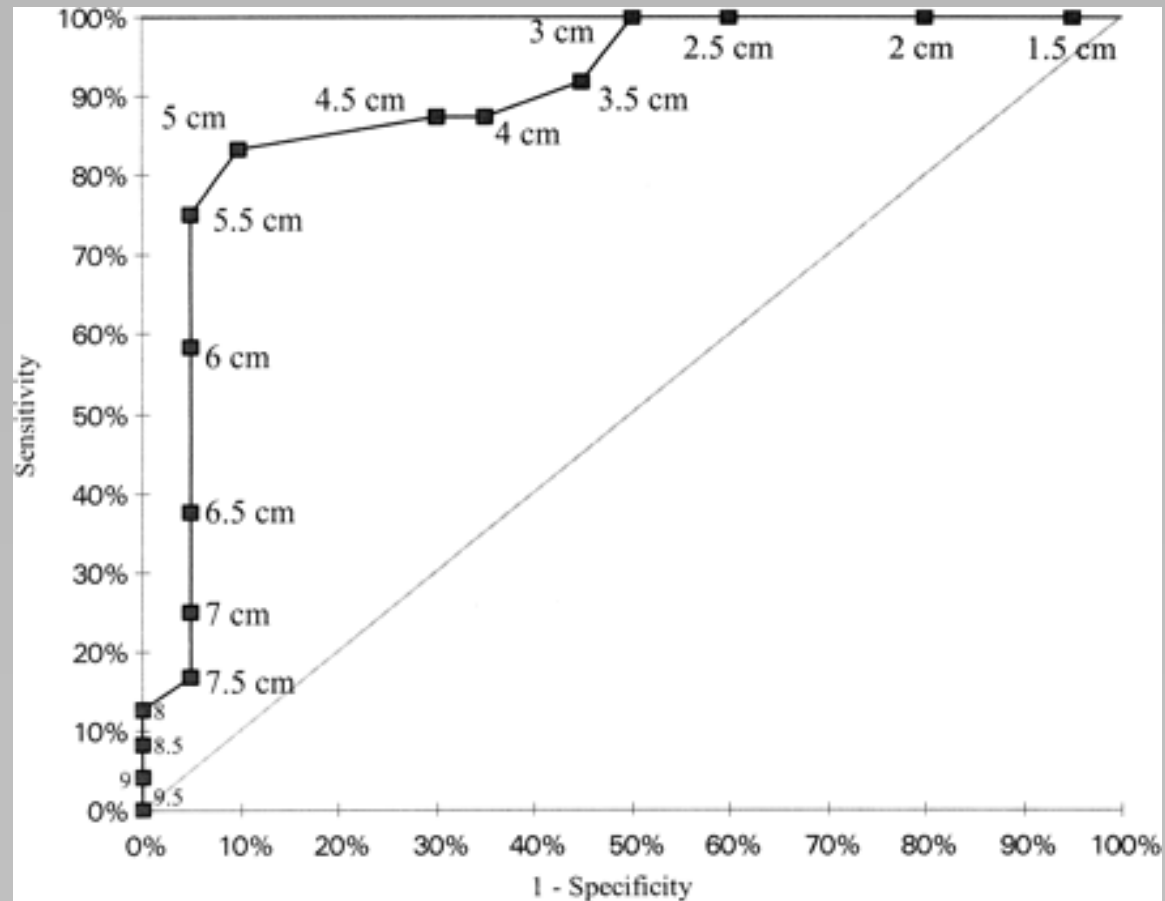


P R
1,9 3,8

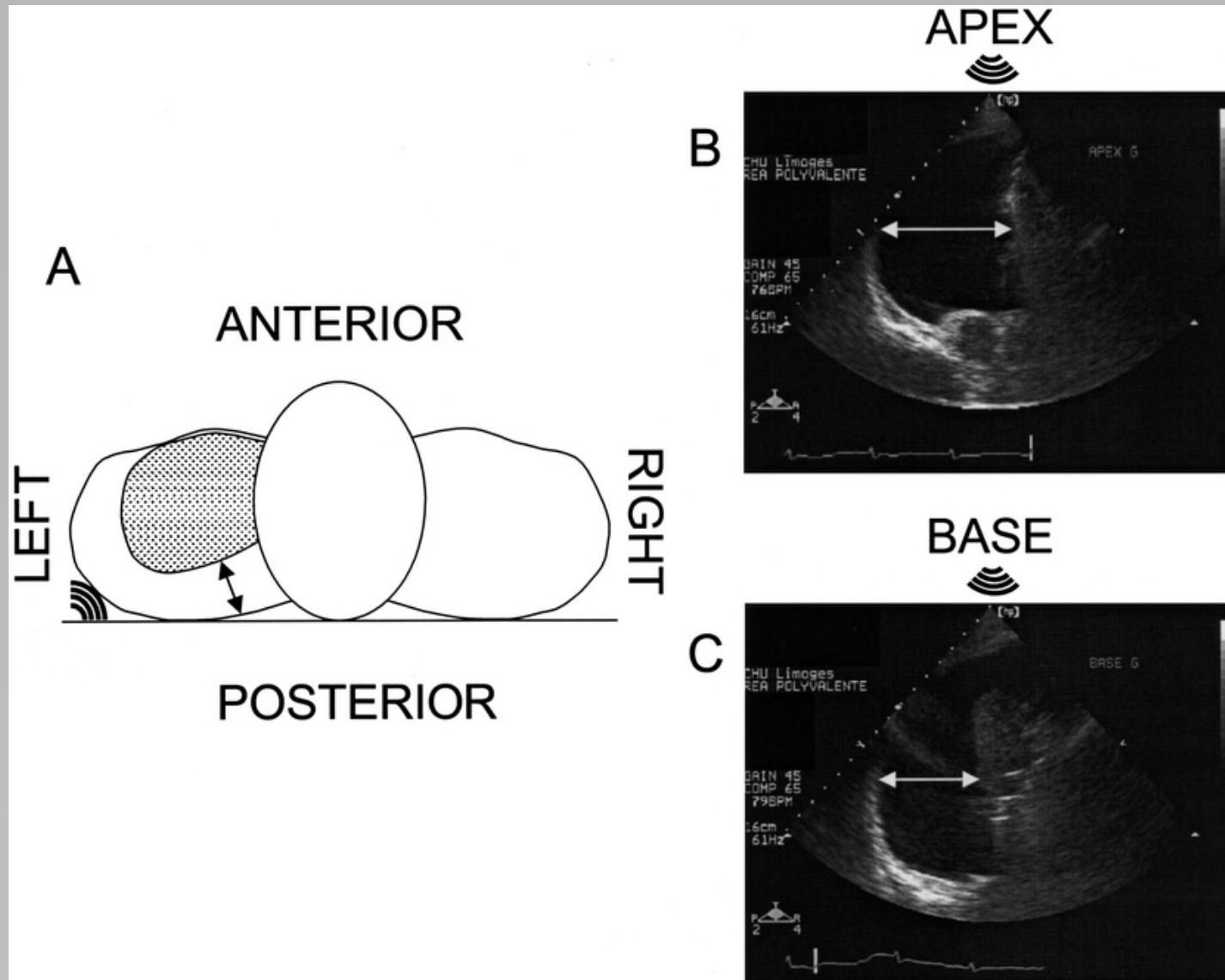


Roch et coll Chest 2005

Epaisseur > 5 cm: VPP = 91% pour épanchement > 500 ml

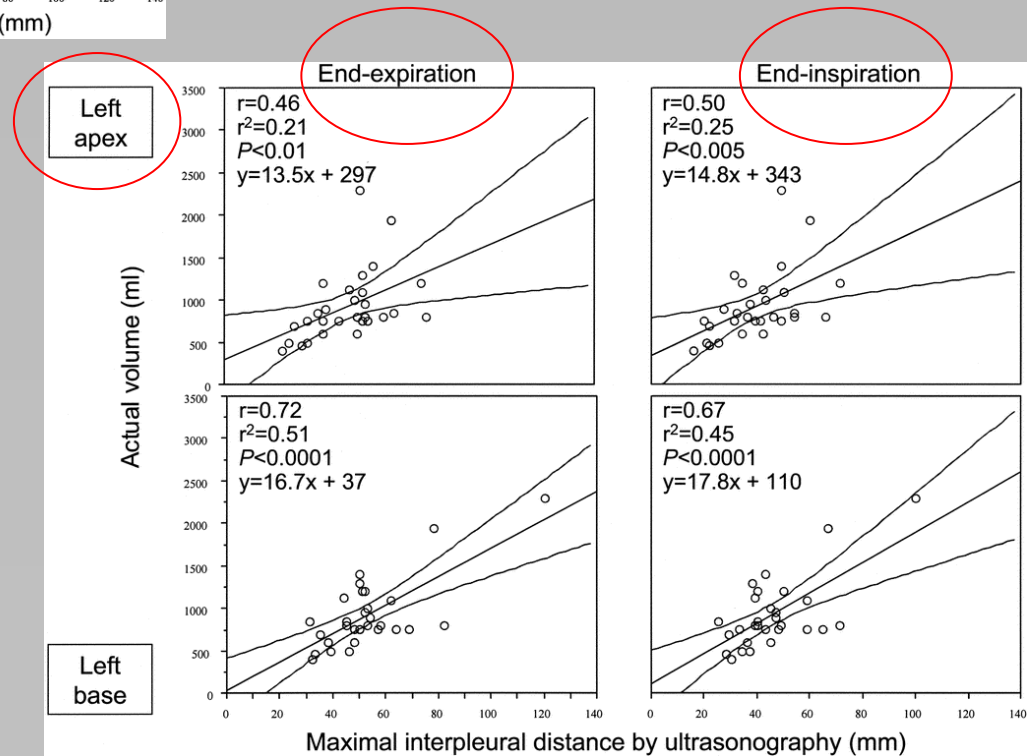
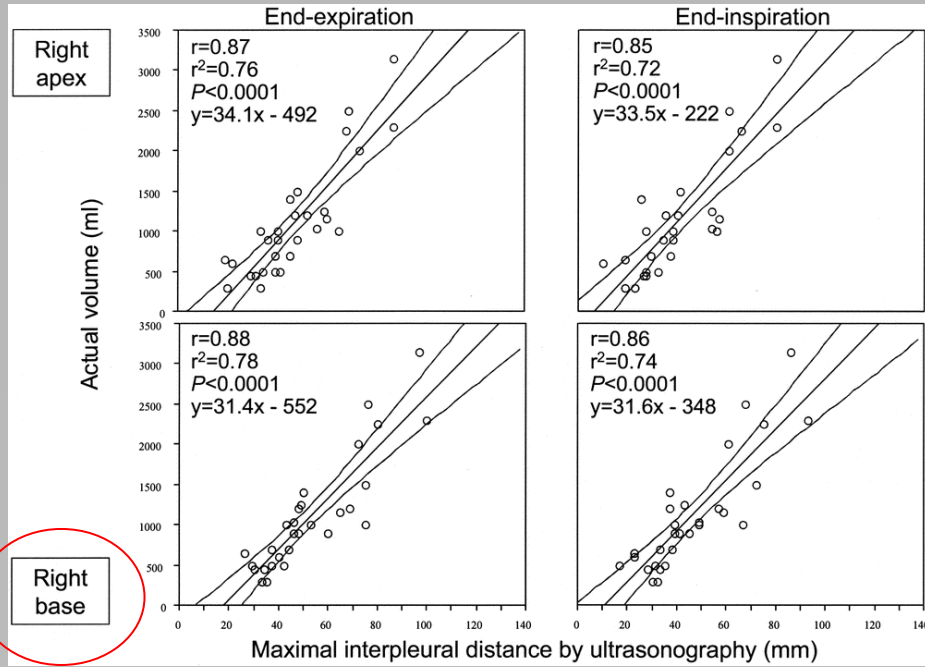


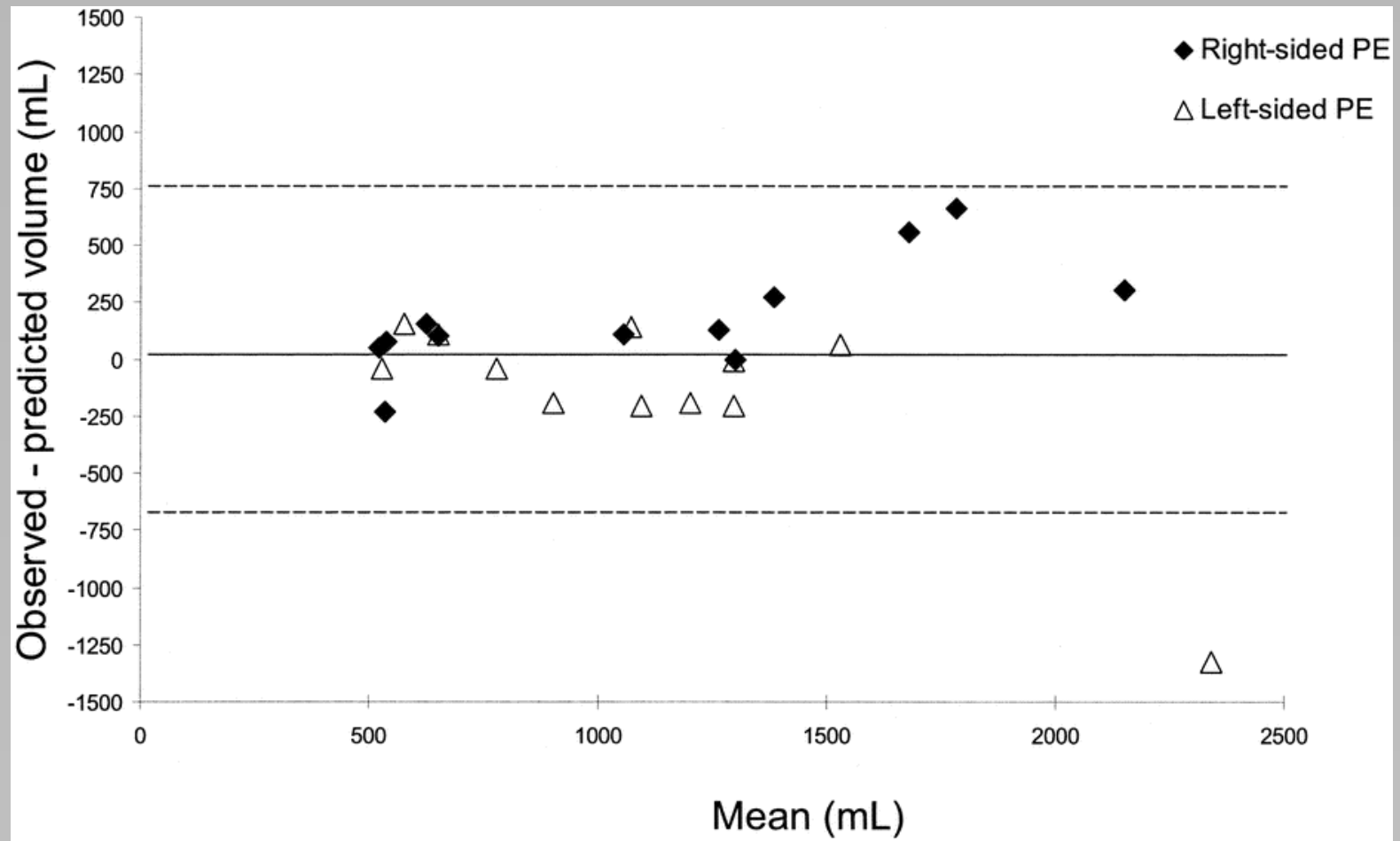
Roch et coll Chest 2005



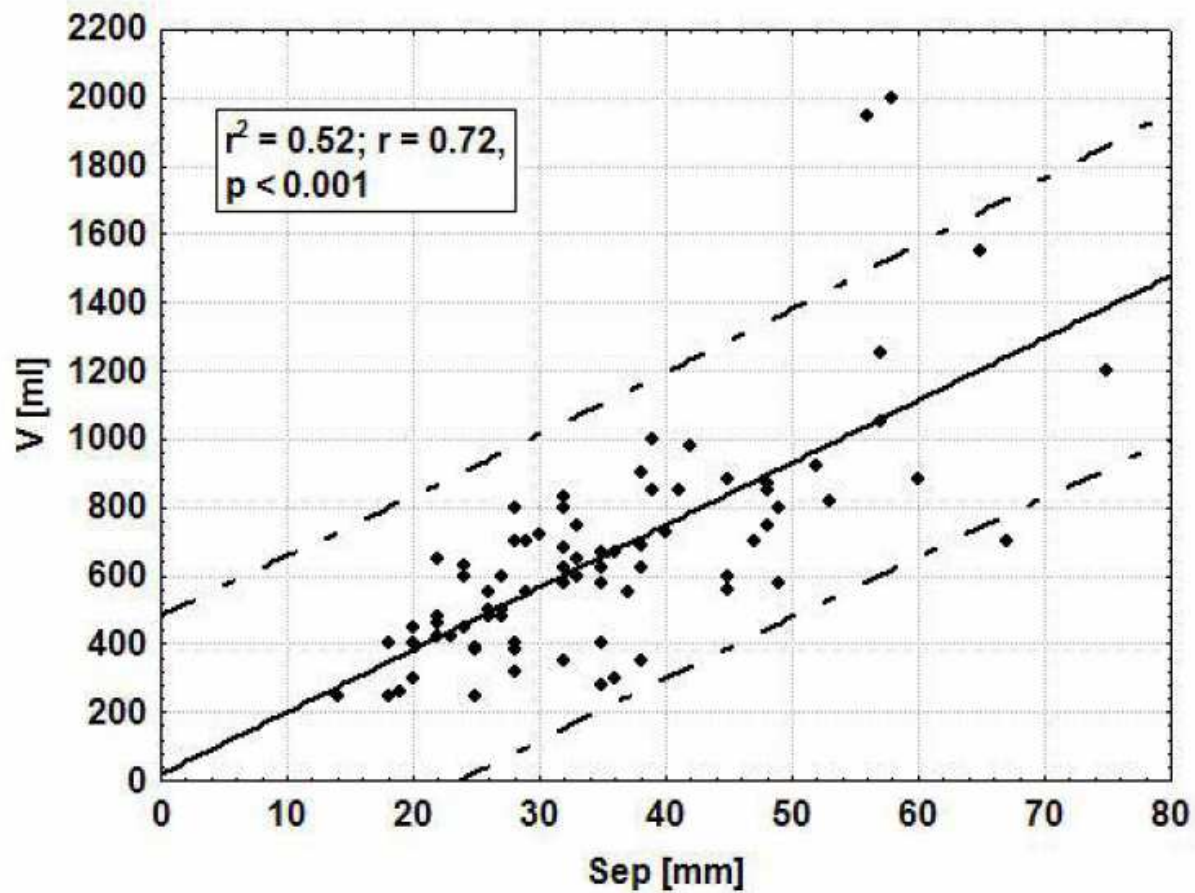
Vignon P Crit Care Med 2005

Vignon P Crit Care Med 2005





Vignon P Crit Care Med 2005



Volume (ml) = 20 x épaisseur (mm), erreur ± 150 ml

Indications de l'échographie pleurale

- diagnostique
- guide à la ponction (cloisonnement !)
- aide à l'indication de drainage:
 - intérêt du drainage non prouvé !!
 - syndrome restrictif, échec sevrage
 - prédiction épanchement important
 - quantification précise