OAP de sevrage : De la physiopathologie au traitement

Dr Ines FATHALLAH

Service de réanimation polyvalente HRBA

INTRODUCTION

THE LANCET
Respiratory Medicine

Volume 11, Issue 5, May 2023, Pages 465-476

Articles

Weaning from mechanical ventilation in intensive care units across 50 countries (WEAN SAFE): a multicentre, prospective, observational cohort study

Tài Pham PhD [a b], Prof Leo Heunks MD [c], Prof Giacomo Bellani MD [d e], Fabiana Madotto PhD [f], Irene Aragao MD [g], Gaëtan Beduneau MD [h], Ewan C Goligher MD [i j], Prof Giacomo Grasselli MD [f k], Prof Jon Henrik Laake MD [l], Prof Jordi Mancebo MD [m] *, Prof Oscar Peñuelas MD [n o], Lise Piquilloud MD [p], Prof Antonio Pesenti MD [f k], Prof Hannah Wunsch MD [i q], Prof Frank van Haren PhD [r s], Prof Laurent Brochard MD [i t] *, Prof John G Laffey MD [u v] *
WEAN SAFE Investigators†

patients with separation attempts, 2927 (64·7%) had a short wean (≤1 day), 457 (10·1%) had intermediate weaning (2–6 days), 433 (9·6%) required prolonged weaning (≥7 days), and 706 (15·6%) had weaning failure. Higher sedation scores were independently

Findings: Between Oct 4, 2017, and June 25, 2018, 10 232 patients were screened for eligibility, of whom 5869 were enrolled. 4523 (77·1%) patients underwent at least one separation attempt and 3817 (65·0%) patients were successfully weaned from ventilation at day 90. 237 (4·0%) patients were transferred before any separation attempt, 153 (2·6%) were transferred after at least one separation attempt and not successfully weaned, and 1662 (28·3%) died while invasively ventilated. The median

INTRODUCTION

Liu *et al. Critical Care* (2016) 20:369
DOI 10.1186/s13054-016-1533-9

Critical Care

RESEARCH Open Access

Cardiac dysfunction induced by weaning from mechanical ventilation: incidence, risk factors, and effects of fluid removal

Jinglun Liu[1,2,3,4†], Feng Shen[1,2,3,5†], Jean-Louis Teboul[1,2,3], Nadia Anguel[1,2,3], Alexandra Beurton[1,2,3], Nadia Bezaz[1,2,3], Christian Richard[1,2,3] and Xavier Monnet[1,2,3*]

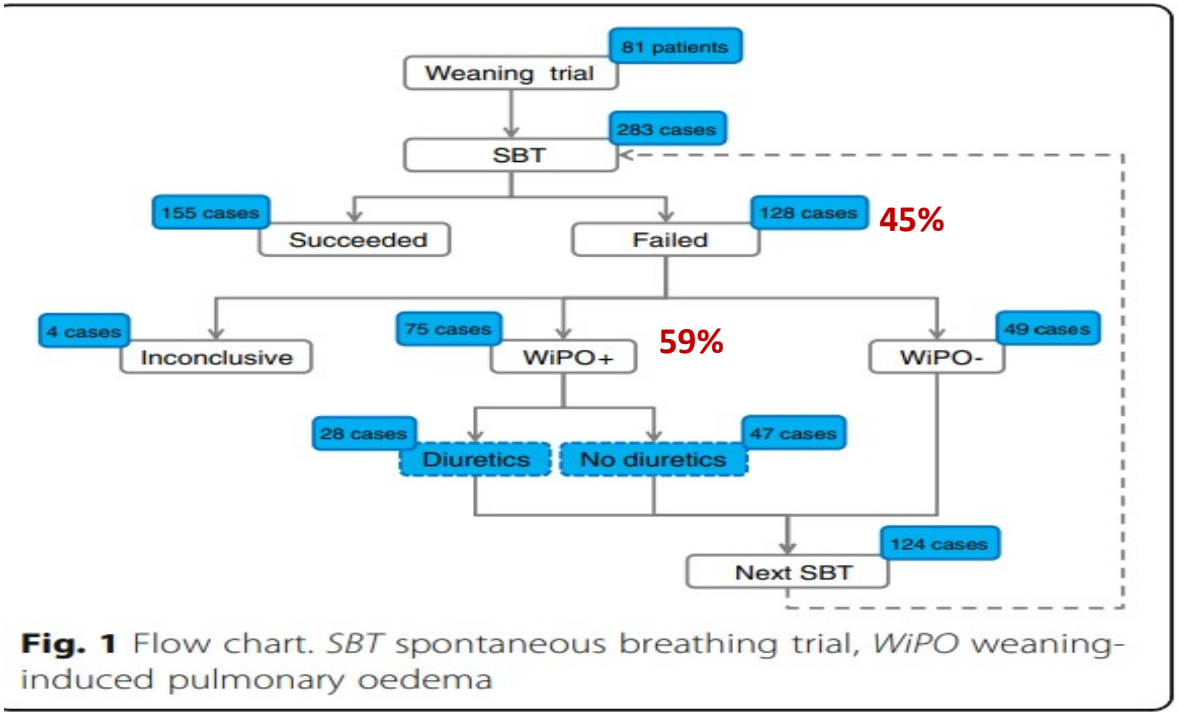


Fig. 1 Flow chart. *SBT* spontaneous breathing trial, *WiPO* weaning-induced pulmonary oedema

INTRODUCTION

Hamad *et al.*
The Egyptian Journal of Bronchology (2023) 17:22
https://doi.org/10.1186/s43168-023-00197-3

The Egyptian Journal of Bronchology

RESEARCH **Open Access**

Diagnostic accuracy of lung ultrasound in detecting weaning-induced pulmonary edema

Dina A. Hamad[1*], Alaa Eldin Abdel-Moniem[1], Taghreed S. Meshref[1], Marwan N. Mohamed[2], Shimaa A. Elghazally[3] and Ahmad B. Abdelrehim[1]

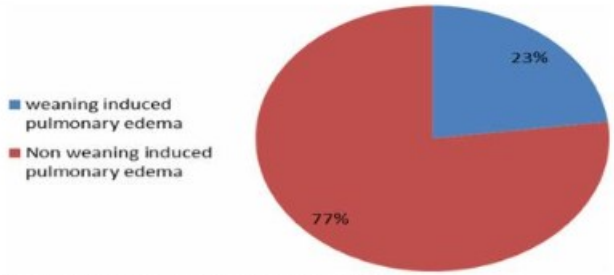


Fig. 1 Frequency of confirmed diagnosis of weaning-induced pulmonary edema (WIPE)

INTRODUCTION

Observational Study

Medicine OPEN

Comparison of International Consensus Conference guidelines and WIND classification for weaning from mechanical ventilation in Brazilian critically ill patients

A retrospective cohort study

Alessandra Fabiane Lago, PT, MS[a,b,*], Ada Clarice Gastaldi, PT, PhD[b], Amanda Alves Silva Mazzoni, PT[b], Vanessa Braz Tanaka, PT[b], Vivian Caroline Siansi, PT[b], Isabella Scutti Reis, MD[b], Anibal Basile-Filho, MD, PhD[c]

Table 2

Characteristics of patients according to weaning classification and multiple comparisons within weaning groups.

		ICC classification						WIND classification					
Variable	Category	Simple n=33 (10%)	Difficult n=16 (5%)	Prolonged n=9 (3%)	Without classification n=269 (82%)	*P*-Value	Category	Short n=36 (11%)	Difficult n=18 (5%)	Prolonged 3a n=24 (7%)	Prolonged 3b n=61 (20%)	No weaning n=188 (57%)	*P*-Value
Age (mean ± SD)	–	48.81 (±16.60)	58.43 (±12.32)	49.11 (±19.82)	57.03 (±16.84)	.0644	–	49.47 (±18.76)	54.44 (±14.59)	55.08 (±16.30)	59.31 (±15.17)	56.25 (±17.25)	.82
Gender													
	Male	15	9	3	135	.68	Male	16	10	9	32	95	.82
	Female	18	7	6	134		Female	20	08	15	29	93	
Admission													
	Medical	16	10	5	165	.52	Medical	17	11	15	28	125	.03
	Surgical	17	6	4	104		Surgical	19	7	9	33	63	
Outcome													
	Discharge	33	15	9	97	.0001	Discharge	36	17	23	40	38	.001
	Death	0	1	0	172		Death	0	1	1	21	150	
Extubation													
	Yes	33	16	9	17	.0001	Yes	35	16	9	15	0	.0001
	No	0	0	0	252		No	1	2	15	46	188	
Tracheostomy													
	Yes	–	–	–	123	–	Yes	1	2	12	47	61	.001
	No	–	–	–	204	–	No	35	16	12	14	127	
SAPS 3 mean ± (SD)	–	59.68[†] (±18.93)	66.86[*] (±15.06)	53.44[†] (±17.58)	77.39 (±17.41)	.0001	–	60.42[†] (±18.71)	67.29[†] (±16.96)	66.34[†] (±19.35)	75.05[†] (±16.86)	78.61 (±17.54)	.0001
Death probability mean ± (SD)	–	40.91[†] (±29.23)	54.22 (±27.60)	38.43[†] (±25.41)	67.89 (±25.20)	.0001	–	41.93[*,†,‡] (±29.32)	53.72[†] (±29.47)	55.85[†] (±28.13)	63.61 (±25.58)	69.83 (±24.66)	.0001
MV, days mean ± (SD)	–	4.27[*,†] (±3.23)	6.93 (±4.23)	11.88 (±4.22)	11.54 (±10.31)	.0001	–	4.86[*,†,‡] (±4.26)	6.88[*,‡] (±4.26)	13.20[‡] (±7.74)	17.52[†] (±10.65)	9.46 (±9.57)	.0001
ICU LOS, days mean ± (SD)	–	6.84[*] (±3.97)	10.87 (±5.27)	14.55[†] (±5.02)	11.19 (±9.93)	.0477	–	7.38[*,‡] (±4.59)	10.83[‡] (±5.58)	14.45[†] (±8.62)	17.72[†] (±10.80)	8.79 (±8.60)	.0001

ICC = International Consensus Conference, ICU = intensive care unit, LOS = length of stay, MV = mechanical ventilation, SAPS = Simplified Acute Physiology Score, WIND = Weaning according to New Definition.

[*] Significant difference for the comparison of prolonged or prolonged 3a with simple/short or difficult weaning patients.

[†] Significant difference for the comparison of patients without classification or no weaning with simple/short, difficult, prolonged, prolonged 3a, or 3b weaning patients.

[‡] Significant difference for the comparison of prolonged 3b with simple/short, difficult or prolonged 3a weaning patients.

DÉFINITIONS

✓ **Epreuve de ventilation spontanée**

Elément clé de la phase de sevrage

✓ **Tentative de sevrage**

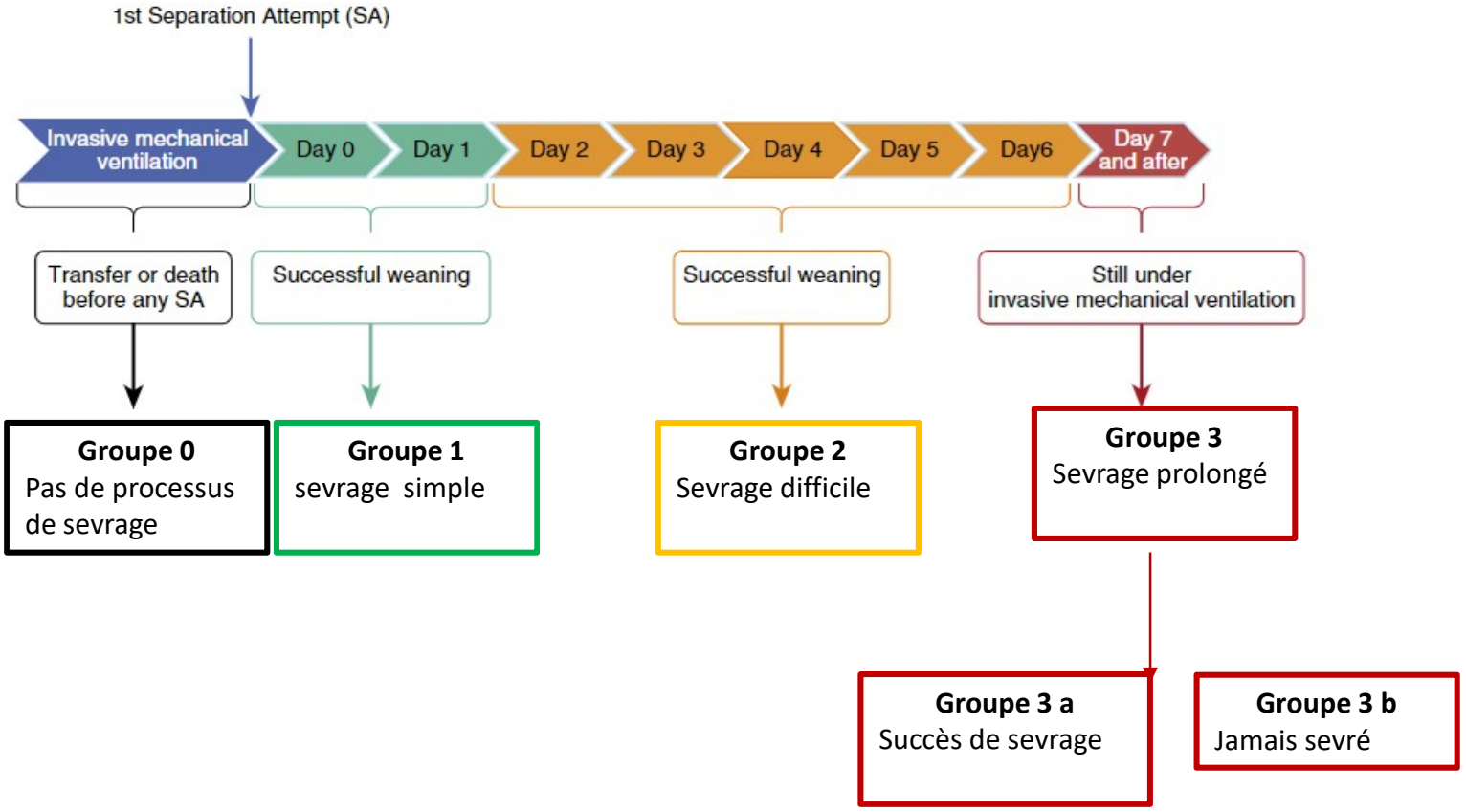
Epreuve de ventilation spontanée et ou autoextubation

✓ **Extubation avec succès**

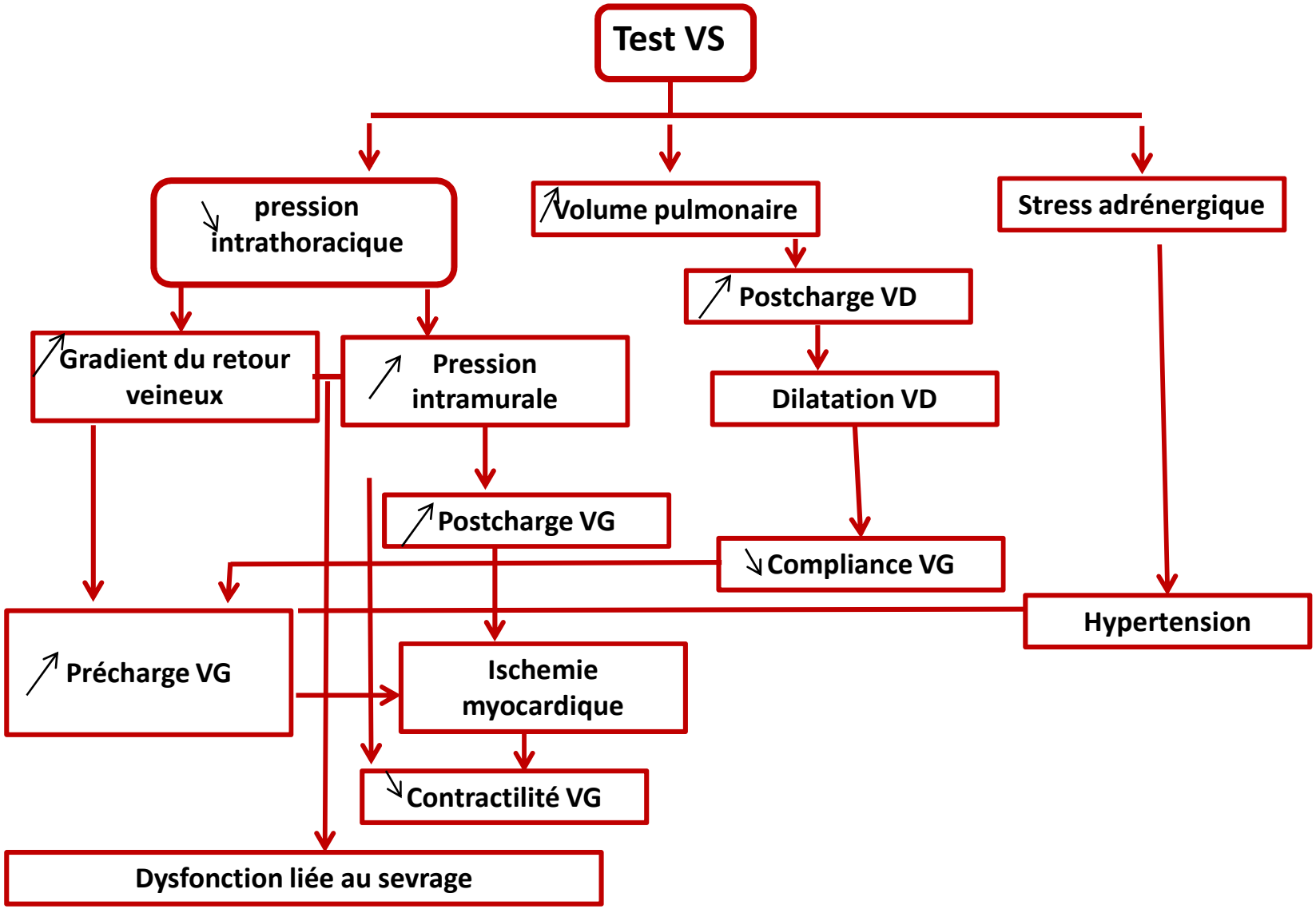
programmée ou autoextubation sans décès
ni re-intubation

DÉFINITIONS

« wind » classification



MÉCANISME


Test VS
↘ pression intrathoracique
↗ Volume pulmonaire
Stress adrénergique
↗ Postcharge VD
↗ Gradient du retour veineux
↗ Pression intramurale
Dilatation VD
↗ Postcharge VG
↘ Compliance VG
Hypertension
↗ Précharge VG
Ischemie myocardique
↘ Contractilité VG
Dysfonction liée au sevrage

FACTEURS DE RISQUES

Liu *et al. Critical Care* (2016) 20:369
DOI 10.1186/s13054-016-1533-9

Critical Care

RESEARCH Open Access

Cardiac dysfunction induced by weaning from mechanical ventilation: incidence, risk factors, and effects of fluid removal

Jinglun Liu[1,2,3,4†], Feng Shen[1,2,3,5†], Jean-Louis Teboul[1,2,3], Nadia Anguel[1,2,3], Alexandra Beurton[1,2,3], Nadia Bezaz[1,2,3], Christian Richard[1,2,3] and Xavier Monnet[1,2,3*]

FACTEURS DE RISQUES

Table 2 Summary of the results of forward logistic regression with the occurrence of at least one episode of weaning-induced pulmonary oedema as the dependent variable

Explaining variable	Odds ratio (95 % CI)	*P* value
Previous COPD	8.7 (2.0–37.3)	0.003
Previous structural cardiopathy	4.5 (1.4–14.1)	0.001
Obesity	3.6 (1.2–12.6)	0.03

CI confidence interval, *COPD* chronic obstructive pulmonary disease

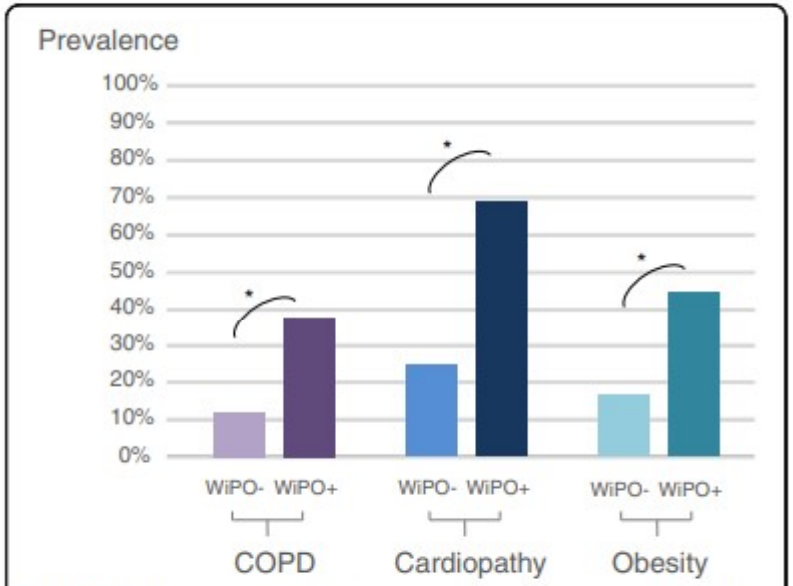


Fig. 2 Prevalence of risk factors associated with weaning-induced pulmonary oedema (*WiPO*) depending on the presence (+) or absence (–) of the disease. "Cardiopathy" means dilated and/or hypertrophic and/or hypokinetic cardiopathy and/or significant valvular disease. *COPD* chronic obstructive pulmonary disease. * p <0.05 WiPO+ vs. WiPO-

FACTEURS DE RISQUES

CHEST

Original Research

COPD

Cardiovascular Comorbidity in COPD

Systematic Literature Review

Hana Müllerova, PhD; Alvar Agusti, MD, PhD; Sebhat Erqou, MD, PhD; and Douglas W. Mapel, MD, MPH, FCCP

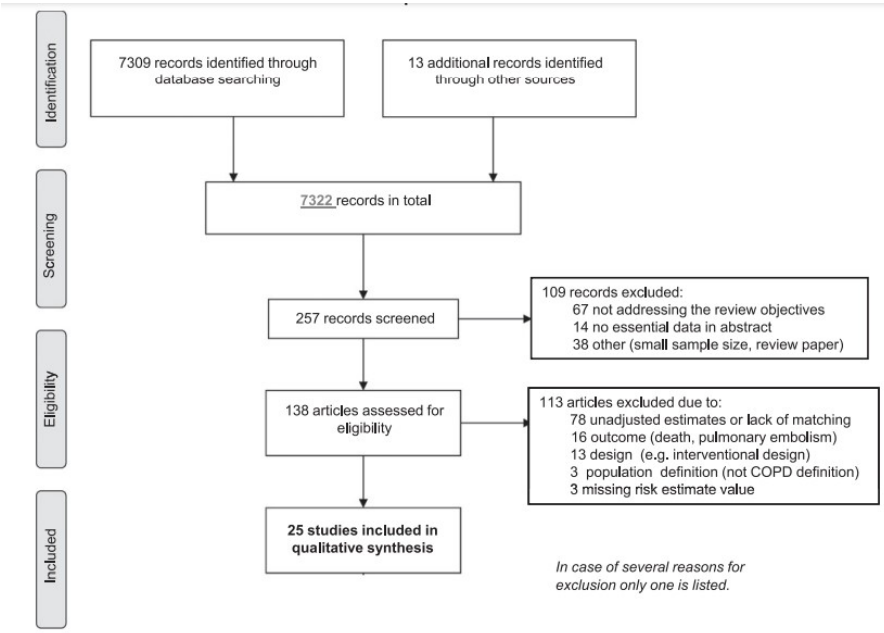
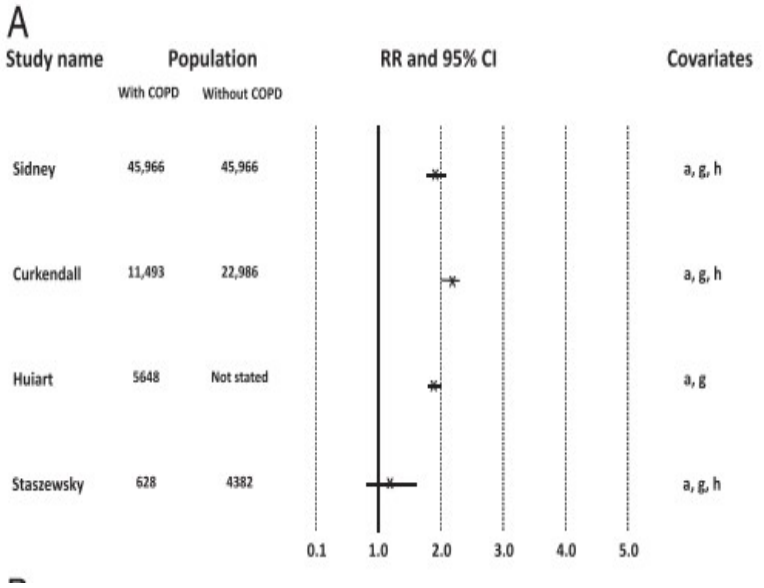


FIGURE 1. Study flow diagram.



Méthodes diagnostiques

1-Cathétérisme artérielle pulmonaire: PAPO

2- Eau pulmonaire

3- Echocardiagraphie

4- Echographie pulmonaire

5-Marqueurs biologique

Méthodes diagnostiques

1-Cathétérisme artérielle pulmonaire: PAPO

2- Eau pulmonaire

3- Echocardiagraphie

4- Echographiepulmonaire

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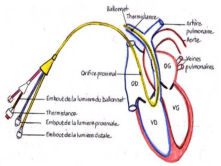
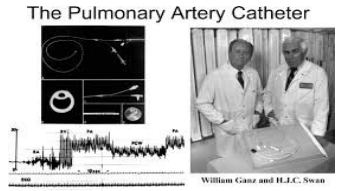
MÉTHODES DIAGNOSTIQUES



Cathétérisme droit (gold standard)



Anesthesiology
69:171–179, 1988

Acute Left Ventricular Dysfunction during Unsuccessful Weaning from Mechanical Ventilation

Francois Lemaire, M.D., Jean-Louis Teboul, M.D.,† Luc Cinotti, M.D.,‡ Guillen Giotto, M.D.,§ Fekri Abrouk, M.D.,§ Gabriel Steg, M.D.,§ Isabelle Macquin-Mavier, M.D.,¶ Warren M. Zapol, M.D.***

The most important finding of our study was that after 10 minutes of SV_1, transmural end-expiratory PAOP had increased from 8 to 25 mmHg ($P < .001$; table 2; fig. 1). In every patient, there was a progressive increase of PAOP, with seven patients showing a marked increase above 20 mmHg (four of seven are

Anesthesiology
V 69, No 2, Aug 1988

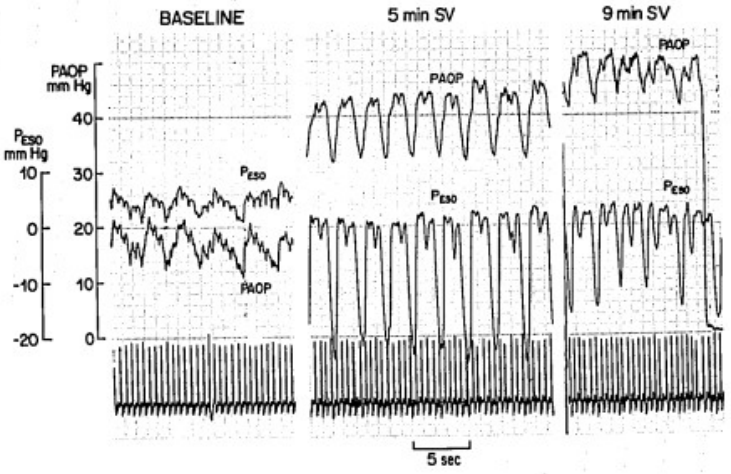


FIG. 1. Weaning of patient 6 from mechanical ventilation (baseline) to spontaneous ventilation (SV_1). There is a progressive increase of pulmonary artery occlusion pressure (PAOP) from 14 mmHg (baseline) to 50 mmHg (9 min SV). The esophageal pressure is reduced during SV with marked negative inspiratory excursions.

Méthodes diagnostiques

1-Cathétérisme artérielle pulmonaire: PAPO

2- Eau pulmonaire

3- Echocardiagraphie

4- Echographie pulmonaire

5-Marqueurs biologique

MÉTHODES DIAGNOSTIQUES

Extravascular Lung Water, B-Type Natriuretic Peptide, and Blood Volume Contraction Enable Diagnosis of Weaning-Induced Pulmonary Edema*

Martin Dres, MD[1,2]; Jean-Louis Teboul, MD, PhD[1,2]; Nadia Anguel, MD[1]; Laurent Guerin, MD[1,2]; Christian Richard, MD[1,2]; Xavier Monnet, MD, PhD[1,2]

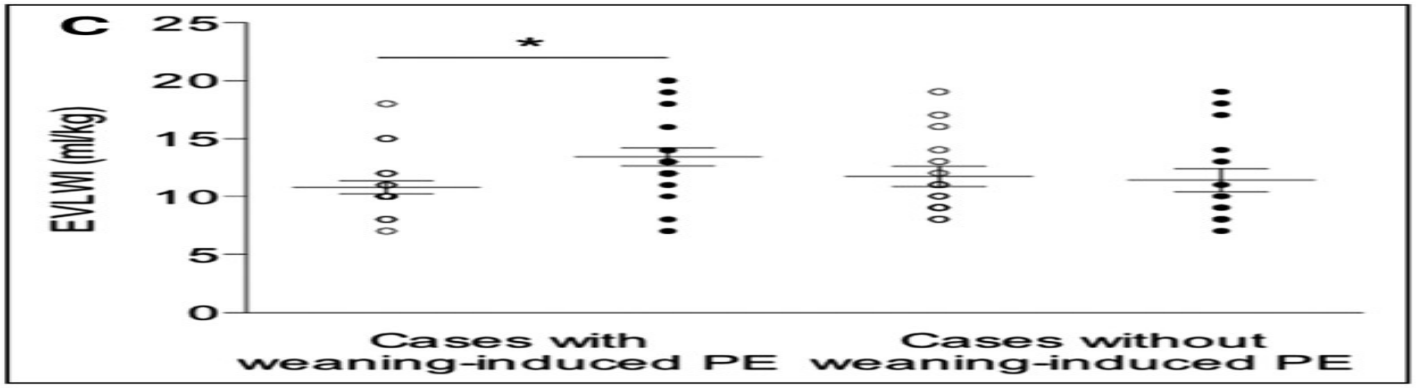


TABLE 3. Diagnostic Performance of the Variation of Extravascular Lung Water, Plasma Protein Concentration, Hemoglobin, and B-Type Natriuretic Peptide to Detect Weaning-Induced Pulmonary Edema

	Threshold	Areas Under the Receiver Operating Characteristics Curve	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Youden Index	Positive Likelihood Ratio	Negative Likelihood Ratio
Variation of extravascular lung water	14%	0.89	0.67	1.00	1.00	0.81	0.67	∞	0.33
Variation of plasma protein concentration	5%	0.97	0.86	0.87	0.90	0.90	0.73	6.66	0.16
Variation of hemoglobin	5%	0.96	0.81	1.00	1.00	0.88	0.81	∞	0.19
Variation of B-type natriuretic peptide	12%	0.76	0.76	0.78	0.83	0.82	0.54	3.45	0.31

MÉTHODES DIAGNOSTIQUES

Liu *et al. Critical Care* (2016) 20:369
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Critical Care

RESEARCH Open Access

Cardiac dysfunction induced by weaning from mechanical ventilation: incidence, risk factors, and effects of fluid removal

Jinglun Liu[1,2,3,4†], Feng Shen[1,2,3,5†], Jean-Louis Teboul[1,2,3], Nadia Anguel[1,2,3], Alexandra Beurton[1,2,3], Nadia Bezaz[1,2,3], Christian Richard[1,2,3] and Xavier Monnet[1,2,3*]

Table 5 Haemodynamic variables before and at the end of SBT *(Continued)*

Global end-diatolic volume (mL/m^2)							
Succeeded SBT ($n = 40$)	825 ± 254	880 ± 177	0.199				
Failed SBT ($n = 45$)	815 ± 225	916 ± 287	0.002	0.88	0.59		
Cases with WiPO ($n = 30$)	849 ± 133	1032 ± 233	0.000				
Cases without WiPO ($n = 15$)	632 ± 166	624 ± 187	0.718			0.01	<0.01
Extravascular lung water (mL/kg)							
Succeeded SBT ($n = 40$)	10 ± 5	11 ± 3	0.874				
Failed SBT ($n = 45$)	11 ± 3	12 ± 4	0.020	0.91	0.09		
Cases with WiPO ($n = 30$)	11 ± 3	14 ± 4	0.030				
Cases without WiPO ($n = 15$)	9 ± 5	10 ± 1	0.296			0.05	0.01

Values are expressed as mean ± standard deviation
SBT spontaneous breathing trial, *WiPO* weaning-induced pulmonary oedema

Méthodes diagnostiques

1-Cathétérisme artérielle pulmonaire: PAPO

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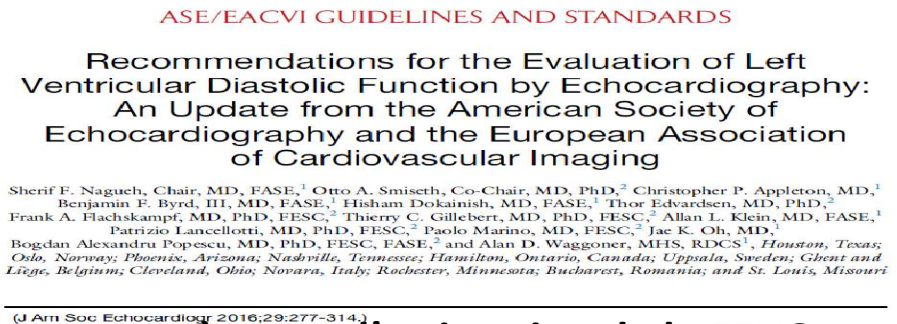
MÉTHODES DIAGNOSTIQUES

Echocardiographie

- **Evaluation des pressions de remplissage**



ASE/EACVI GUIDELINES AND STANDARDS

Recommendations for the Evaluation of Left Ventricular Diastolic Function by Echocardiography: An Update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging

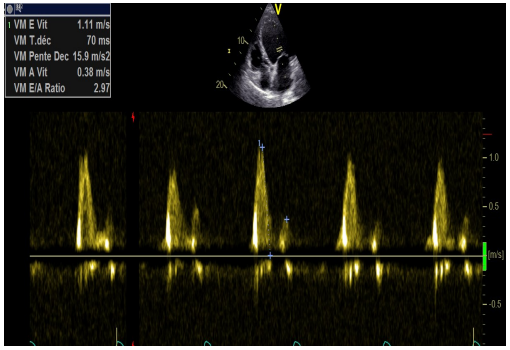
Sherif F. Nagueh, Chair, MD, FASE,[1] Otto A. Smiseth, Co-Chair, MD, PhD,[2] Christopher P. Appleton, MD,[1] Benjamin F. Byrd, III, MD, FASE,[1] Hisham Dokainish, MD, FASE,[1] Thor Edvardsen, MD, PhD,[2] Frank A. Flachskampf, MD, PhD, FESC,[2] Thierry C. Gillebert, MD, PhD, FESC,[2] Allan L. Klein, MD, FASE,[1] Patrizio Lancellotti, MD, PhD, FESC,[2] Paolo Marino, MD, FESC,[2] Jae K. Oh, MD,[1] Bogdan Alexandru Popescu, MD, PhD, FESC, FASE,[2] and Alan D. Waggoner, MHS, RDCS[1], *Houston, Texas; Oslo, Norway; Phoenix, Arizona; Nashville, Tennessee; Hamilton, Ontario, Canada; Uppsala, Sweden; Ghent and Liège, Belgium; Cleveland, Ohio; Novara, Italy; Rochester, Minnesota; Bucharest, Romania; and St. Louis, Missouri*

(J Am Soc Echocardiogr 2016;29:277-314.)

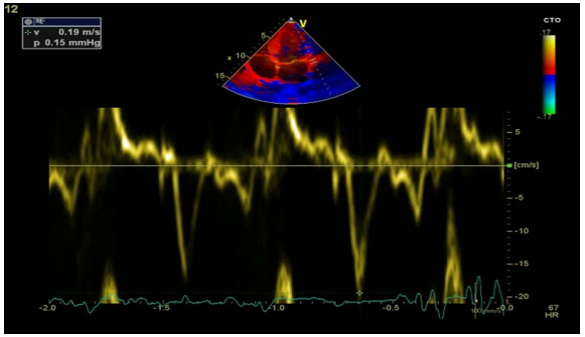
4 paramètres et l'estimation de la FEVG

- ✓ **E, A et E/A**, TDE au flux mitral (Dp)
- ✓ **É et E/é** (à l'anneau mitral , paroi septale, paroi lat, au DTI)
- ✓ **Vol OG**
- ✓ **Vmax de l'IT** (sur le flux de l'IT en Dc)

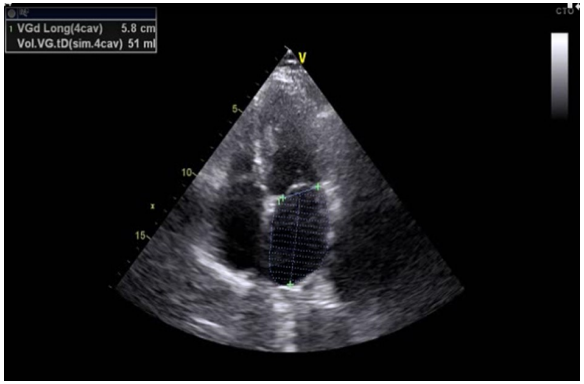
MÉTHODES DIAGNOSTIQUES



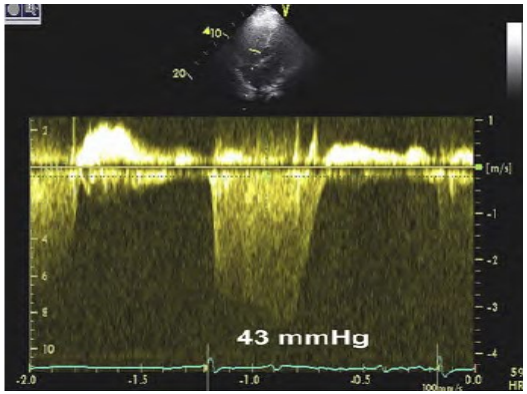
E-A-rapport E/A et TDE
Flux mitral



E' au DTI à l'anneau mitral



Volume OG



Vmax de l'IT

MÉTHODES DIAGNOSTIQUES

Echocardiographic diagnosis of pulmonary artery occlusion pressure elevation during weaning from mechanical ventilation*

Bouchra Lamia, MD, MPH, PhD; Julien Maizel, MD; Ana Ochagavia, MD; Denis Chemla, MD, PhD; David Osman, MD; Christian Richard, MD; Jean-Louis Teboul, MD, PhD

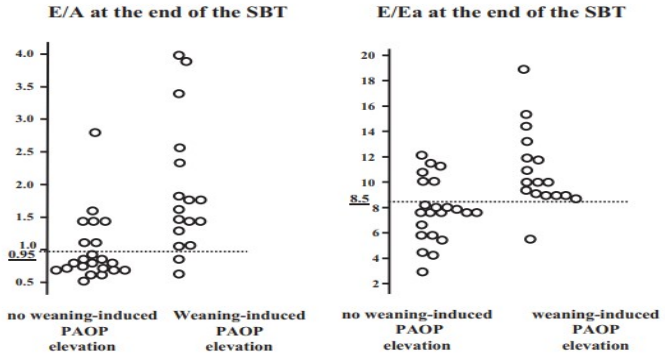
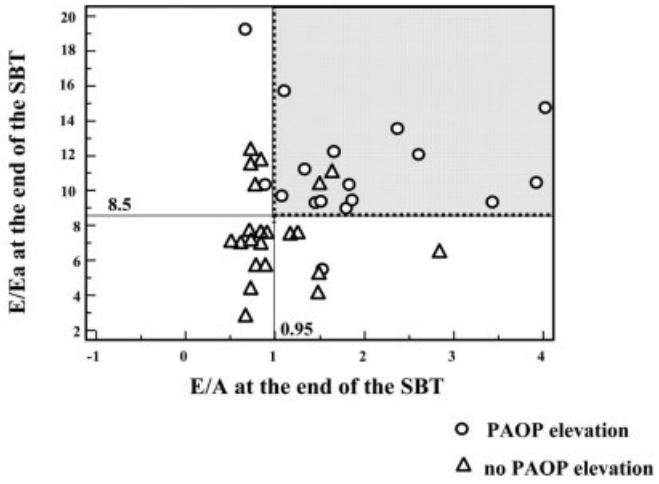


Figure 1. Individual values of ratio of early (E) to late (A) peak diastolic velocities measured using Doppler transmitral flow (*E/A*) and ratio of early (E) diastolic velocity measured with Doppler transmitral flow to early (Ea) peak diastolic velocity of mitral annulus measured with tissue Doppler imaging (*E/Ea*) at the end of the spontaneous breathing trial (*SBT*) in patients with weaning-induced pulmonary artery occlusion pressure elevation and in patients with no weaning-induced pulmonary artery occlusion pressure elevation.



MÉTHODES DIAGNOSTIQUES

Estimation of Pulmonary Artery Occlusion Pressure Using Doppler Echocardiography in Mechanically Ventilated Patients

Clément Brault, MD[1]; Julien Marc, MD[1]; Pablo Mercado, MD[1]; Momar Diouf, PhD[2]; Christophe Tribouilloy, MD, PhD[3]; Yoann Zerbib, MD[1]; Julien Maizel, MD, PhD[1]; Philippe Vignon, MD, PhD[4–6]; Michel Slama, MD, PhD[1]

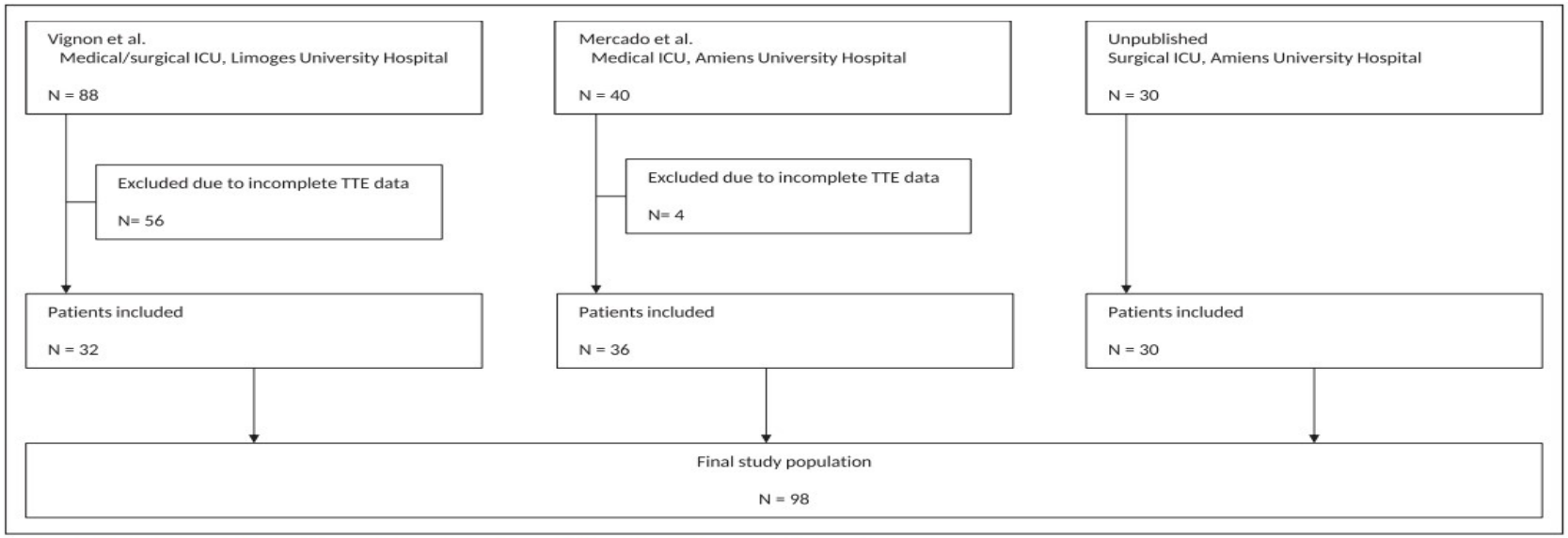
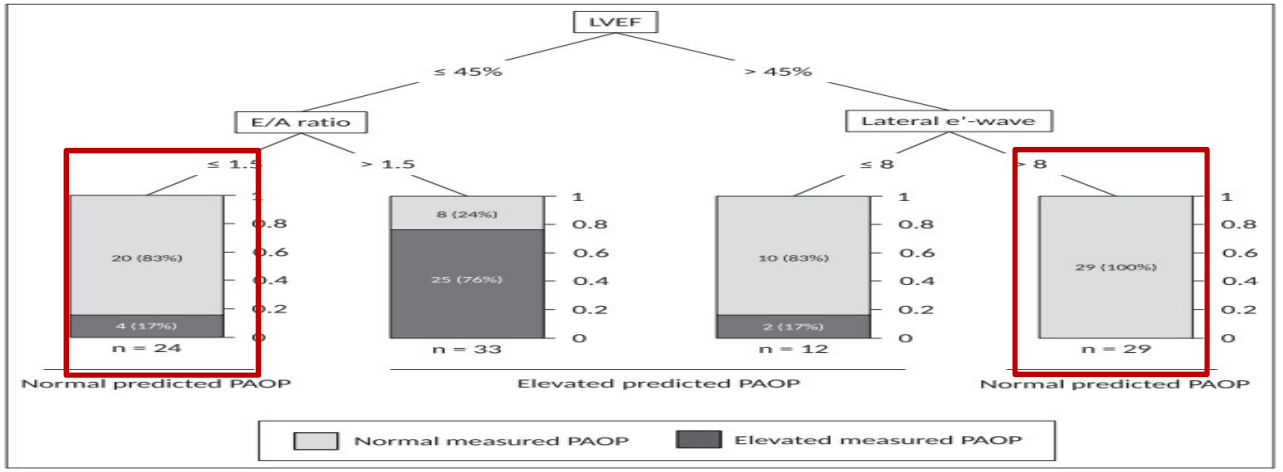


Figure 1. Flowchart of the retrospective study design. TTE = transthoracic echocardiography.

MÉTHODES DIAGNOSTIQUES

TABLE 2. Categorical Data and the Level of Agreement Between the 2016 American Society of Echocardiography and the European Association of Cardiovascular Imaging Guidelines and Pulmonary Artery Catheterization Measurements for the Assessment of Pulmonary Artery Occlusion Pressure

Variables	Measured PAOP < 18 mm Hg	Measured PAOP ≥ 18 mm Hg	Total
Normal predicted PAOP (grade I echocardiography diastolic dysfunction)	20	6	26
Elevated predicted PAOP (grade II/III echocardiography diastolic dysfunction)	7	17	24
Total	27	23	50
Sensitivity			0.74
Specificity			0.74
Positive predictive value			0.71
Negative predictive value			0.77
Positive likelihood ratio			2.85
Negative likelihood ratio			0.35
Kappa agreement (95% CI)			0.478 (0.235–0.722)



MÉTHODES DIAGNOSTIQUES

Evaluation de la fonction diastolique du VG

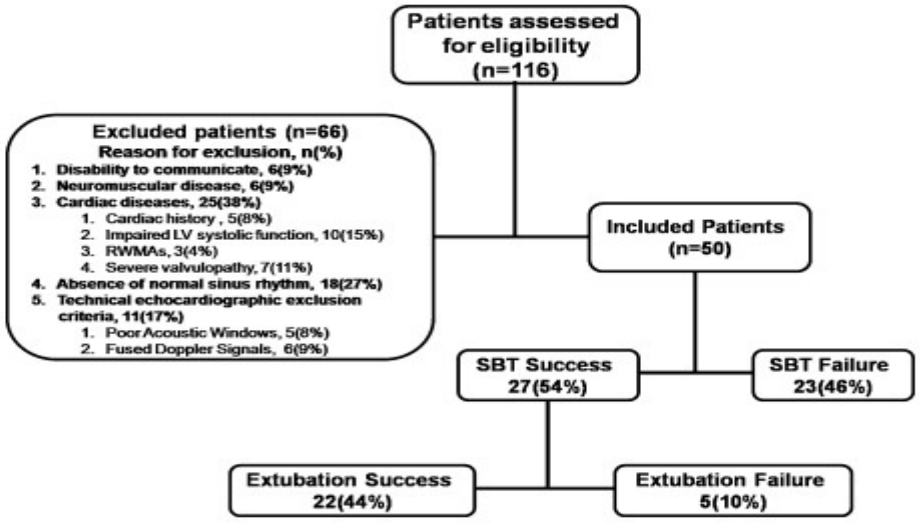
Intensive Care Med (2011) 37:1976–1985
DOI 10.1007/s00134-011-2368-0

ORIGINAL

John Papanikolaou
Demosthenes Makris
Theodosios Saranteas
Dimitrios Karakitsos
Elias Zintzaras
Andreas Karabinis
Georgia Kostopanagiotou
Epaminondas Zakynthinos

New insights into weaning from mechanical ventilation: left ventricular diastolic dysfunction is a key player

Fig. 1 Flowchart of weaning outcomes in the study population. *LV* left ventricular, *RWMAs* regional wall motion abnormalities, *SBT* spontaneous breathing trial



MÉTHODES DIAGNOSTIQUES

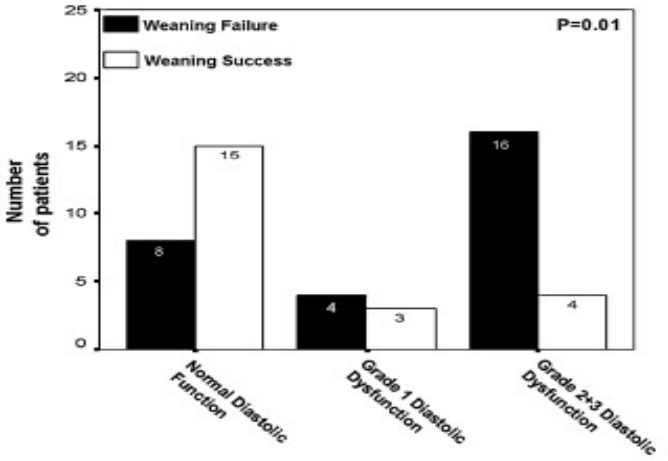


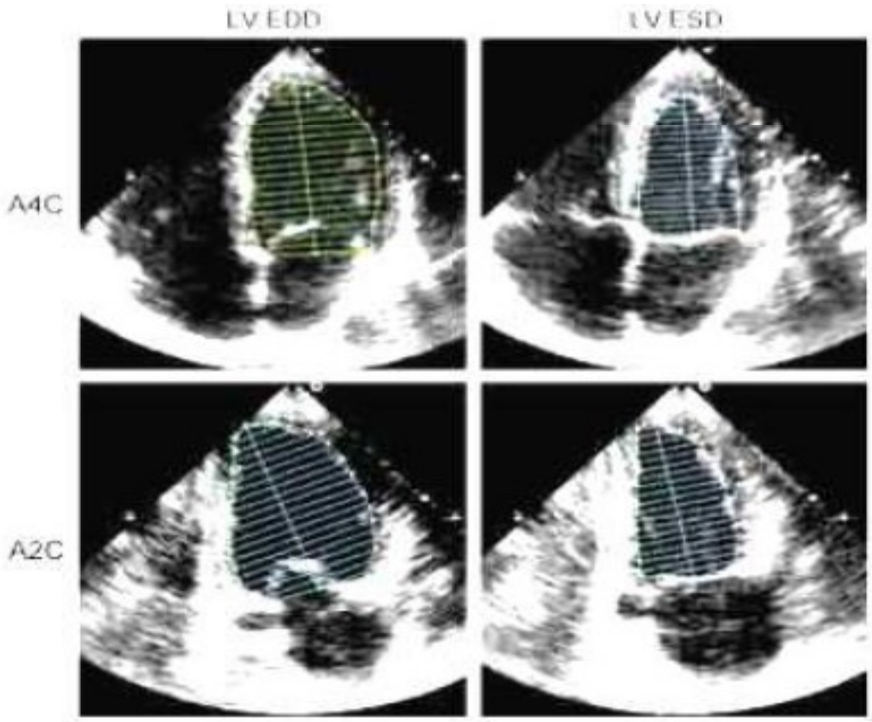
Fig. 2 Outcome of weaning in all 50 participants according to the degree of diastolic dysfunction as assessed by DE at pre-SBT (differences between groups were compared by one-way ANOVA)

Table 4 Diagnostic performance of baseline clinical characteristics and Doppler echocardiographic parameters in predicting weaning failure

	AUC (95% CI)	Cutoff value	Se (%)	Sp (%)	PPV (%)	NPV (%)	Ac (%)
Age (years)	0.76 (0.62–0.9)**	>53	75	73	81	71	76
APACHE II	0.67 (0.51–0.82)*	>18.5	61	73	74	59	66
f/V_T (RSBI)	0.75 (0.61–0.88)**	>58.5	64	81	82	64	72
PFP	0.76 (0.62–0.89)**	>287	71	68	74	65	70
Lateral E_m (cm/s)	0.8 (0.68–0.92)**	<12.5	75	64	72	67	70
Averaged E_m (cm/sec)	0.78 (0.65–0.91)**	<10.5	71	73	77	67	72
Septal S_m (cm/s)	0.74 (0.6–0.88)**	<9.5	82	64	64	82	72
Lateral E/E_m	0.86 (0.75–0.96)**	>7.8	79	100	100	79	88
Septal E/E_m	0.81 (0.68–0.93)**	>7.93	86	73	80	80	80
Averaged E/E_m	0.86 (0.75–0.97)**	>8	79	96	96	78	86
E/V_p	0.74 (0.6–0.87)**	>1.51	75	73	78	70	74

MÉTHODES DIAGNOSTIQUES

Evaluation de la fonction systolique du VG



Simpson biplan modifiée
Méthode de référence +++

Méthodes diagnostiques

1-Cathétérisme artérielle pulmonaire: PAPO

2- Eau pulmonaire

3- Echocardiagraphie

4- Echographie pulmonaire

5-Marqueurs biologique

MÉTHODES DIAGNOSTIQUES

Echographie pulmonaire

Intensive Care Med (2019) 45:601–608
https://doi.org/10.1007/s00134-019-05573-6

ORIGINAL

Lung ultrasound allows the diagnosis of weaning-induced pulmonary oedema

Alexis Ferré[1,2], Max Guillot[1,2], Daniel Lichtenstein[3], Gilbert Mezière[4], Christian Richard[1,2], Jean-Louis Teboul[1,2] and Xavier Monnet[1,2*]

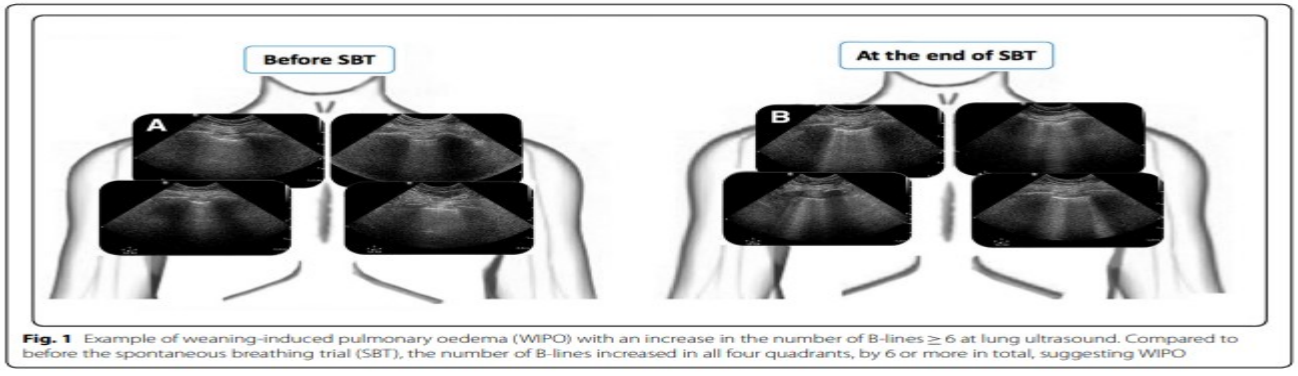


Fig. 1 Example of weaning-induced pulmonary oedema (WIPO) with an increase in the number of B-lines ≥ 6 at lung ultrasound. Compared to before the spontaneous breathing trial (SBT), the number of B-lines increased in all four quadrants, by 6 or more in total, suggesting WIPO

MÉTHODES DIAGNOSTIQUES

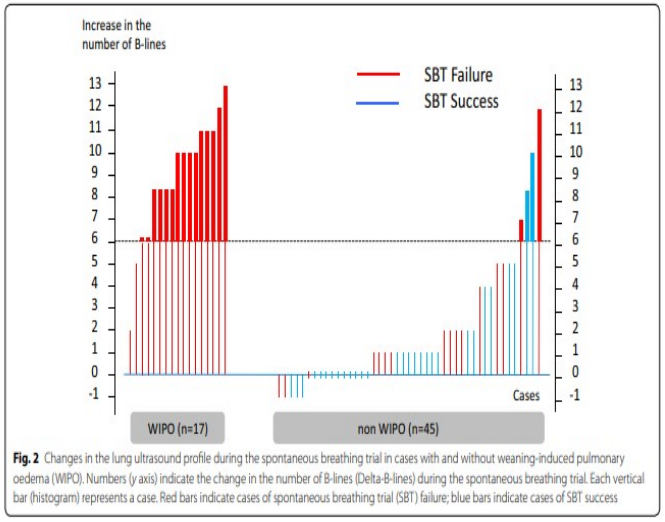


Fig. 2 Changes in the lung ultrasound profile during the spontaneous breathing trial in cases with and without weaning-induced pulmonary oedema (WIPO). Numbers (*y* axis) indicate the change in the number of B-lines (Delta-B-lines) during the spontaneous breathing trial. Each vertical bar (histogram) represents a case. Red bars indicate cases of spontaneous breathing trial (SBT) failure; blue bars indicate cases of SBT success

Table 3 Criterion values and features of the ROC curve for the increase in B-lines for establishing the diagnosis of weaning-induced pulmonary oedema in cases in which the spontaneous breathing trial failed

Criterion	Sensitivity	95% CI	Specificity	95% CI	+ LR	95% CI	− LR	95% CI	PPV	95% CI	NPV	95% CI
≥ 1	100	80–100	0	0–21	1.00	1.0–1.0			52	52–52		
≥ 2	100	80–100	44	20–70	1.78	1.2–2.7	0		65	55–74	100	
≥ 3	94	71–100	69	41–89	3.01	1.4–6.3	0.086	0.01–0.6	76	61–87	92	62–99
≥ 5	94	71–100	75	48–93	3.76	1.6–8.9	0.078	0.01–0.5	80	63–90	92	64–99
≥ 6	88	64–98	88	62–98	7.0	1.9–26.1	0.13	0.04–0.5	82	67–97	88	65–96
≥ 7	76	50–93	88	62–98	6.12	1.6–23.0	0.27	0.1–0.6	87	63–96	78	59–89
≥ 8	76	50–93	94	70–100	12.24	1.8–83.1	0.25	0.1–0.6	93	66–99	79	61–90
≥ 12	12	2–36	94	70–100	1.88	0.2–18.8	0.94	0.8–1.2	67	17–95	50	45–55
≥ 13	6	0–29	100	79–100			0.94	0.8–1.1	100		50	47–53
≥ 14	0	0–20	100	79–100			1	1.0–1.0			49	49–49

CI confidence interval, *NPV* negative predictive value, *PPV* positive predictive value, *+LR* positive likelihood ratio, *−LRs* negative likelihood ratio

MÉTHODES DIAGNOSTIQUES

Hamad *et al.*
The Egyptian Journal of Bronchology (2023) 17:22
https://doi.org/10.1186/s43168-023-00197-3

The Egyptian Journal of Bronchology

RESEARCH Open Access

Diagnostic accuracy of lung ultrasound in detecting weaning-induced pulmonary edema

Dina A. Hamad[1*], Alaa Eldin Abdel-Moniem[1], Taghreed S. Meshref[1], Marwan N. Mohamed[2], Shimaa A. Elghazally[3] and Ahmad B. Abdelrehim[1]

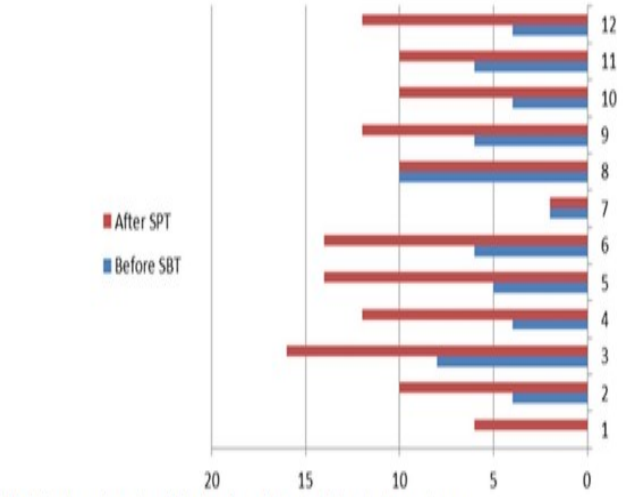


Fig. 2 The changes in number of B lines in patients with weaning-induced pulmonary edema

Table 2 Evaluation of variables during the SBT in patients with and without weaning-induced pulmonary edema

	Cases with WIPO ($n=12$)		P1	Cases without WIPO ($n=40$)		P2	P3
	Before SBT	After SBT		Before SBT	After SBT		
HB	11.82 ± 1.95	12.04 ± 1.94	0.0001*	11.9 ± 2.10	12.04 ± 2.20	0.109	0.974
HCT	42.40 ± 2.51	42.9 ± 2.57	0.0001*	42.52 ± 2.61	42.60 ± 2.70	0.109	< 0.001
Plasma protein (g/L)	51 ± 4	57 ± 7	0.002*	58 ± 9	59 ± 11	0.02*	< 0.001
HR	89.33 ± 8.71	106.58 ± 9.05	0.0001*	83.32 ± 12.058	88.38 ± 11.462	0.002*	0.0001*
Respiratory rate	16.17 ± 4.63	22.0 ± 4.41	0.003*	14.925 ± 2.291	15.225 ± 2.833	0.963	0.0001*
MAP	89.72 ± 7.44	86.94 ± 9.79	0.609	91.42 ± 6.49	89.32 ± 8.398	0.206	0.481
ABG							
PH	7.36 ± 0.043	6.99 ± 1.15	0.113	7.391 ± 0.066	7.371 ± 0.051	0.005*	0.002*
So2	91.92 ± 2.06	83.17 ± 3.74	0.002*	93.85 ± 3.043	90.075 ± 5.44	0.0001*	0.0001*
Po2	74.75 ± 4.37	60.42 ± 5.42	0.002*	80.475 ± 15.300	73.425 ± 12.28	0.003*	0.001*
Pco2	45.75 ± 10.52	49.5 ± 16.77	0.157	44.825 ± 13.82	46.825 ± 15.08	0.05*	0.556
EHCO							
LVED	4.508 ± 0.1676			4.5625 ± 0.597			0.801
LDESD	3.2667 ± 0.111			3.275 ± 0.406			0.947
EF	61 ± 2.5256			61.262 ± 11.33			0.615
Diastolic dysfunction	**N & %**						
< 1	7 (58.3%)			20 (50.0%)			
> 1	5 (41.7%)			15 (37.5%)			
> 2	0 (0%)			5 (12.5%)			
E/A ratio	1.0 ± 0.7	1.3 ± 0.8	0.609	1.3 ± 0.8	1.3 ± 0.9	0.206	0.481
E/é ratio	9.1 ± 3.1	10.5 ± 3.6	0.003*	9.1 ± 4.5	9.2 ± 4.4	0.973	0.0001*
B lines	4.667 ± 2.8391	10.67 ± 3.75	0.005*	2.85 ± 2.26	4.875 ± 3.94	0.0001*	0.0001*
Delta B lines	6.167 ± 3.2706			2.025 ± 2.5 Mean ± SE (2.03 ± 0.40)			0.0001*

ABG Arterial blood gases, EF Ejection fraction, MAP Mean arterial blood pressure, HB Hemoglobin, HCT Hematocrit, HR Heart rate, LVED Left ventricle end diastolic

Méthodes diagnostiques

1-Cathétérisme artérielle pulmonaire: PAPO

2- Eau pulmonaire

3- Echocardiagraphie

4- Echographie pulmonaire

5-Marqueurs biologique

MÉTHODES DIAGNOSTIQUES

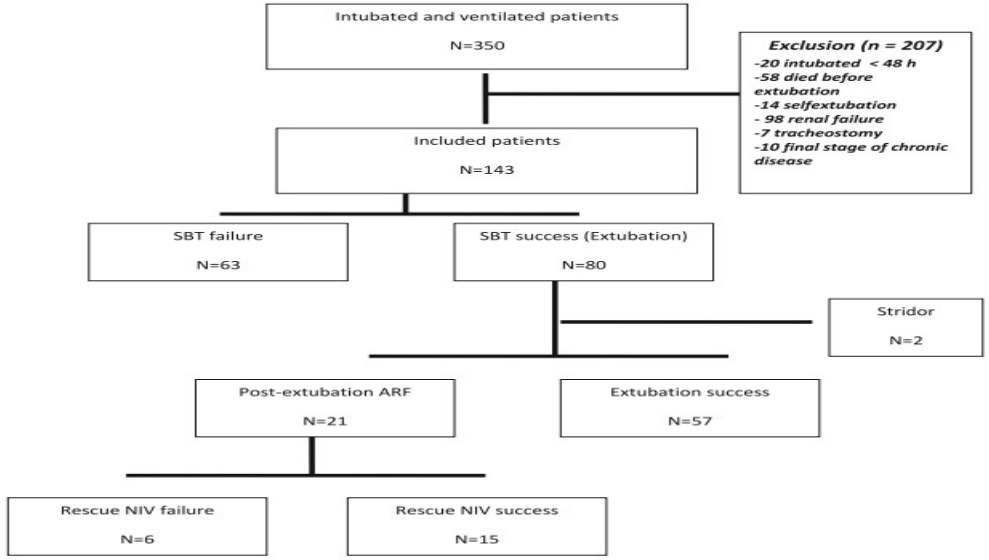
Intensive Care Med (2012) 38:788–795
DOI 10.1007/s00134-012-2524-1

ORIGINAL

Lamia Ouanes-Besbes
Fahmi Dachraoui
Islem Ouanes
Rania Bouneb
Faten Jalloul
Mohamed Dlala
Mohamed Fadhel Najjar
Fekri Abroug

NT-proBNP levels at spontaneous breathing trial help in the prediction of post-extubation respiratory distress

Fig. 1 Flow chart of weaning outcomes in the study population



MÉTHODES DIAGNOSTIQUES

Table 2 Clinical characteristics of extubated patients distributed according to the occurrence of respiratory distress

	Post-extubation respiratory distress (+) ($n = 21$)	Post-extubation respiratory distress (−) ($n = 57$)	p
Age, years med (IQR)	68 (61–75)	60 (48–72)	0.05
Male sex	15 (71 %)	36 (63 %)	NS
SAPS II med (IQR)	33 (20–46)	32 (24–40)	NS
MV duration med (IQR)	4 (2–6)	4 (2–5.5)	NS
Fluid balance day 1 (ml) med (IQR)	200 (35–340)	200 (150–350)	NS
Plasma protein concentration (g/l) med (IQR)	54 (49–59)	60 (55–65)	0.02
Hematocrit (%)	34 (28–40)	32 (26–38)	NS
NT-proBNP (pg/ml) med (IQR)	1,860 (1,800–1,920)	975 (910–1,040)	0.0001

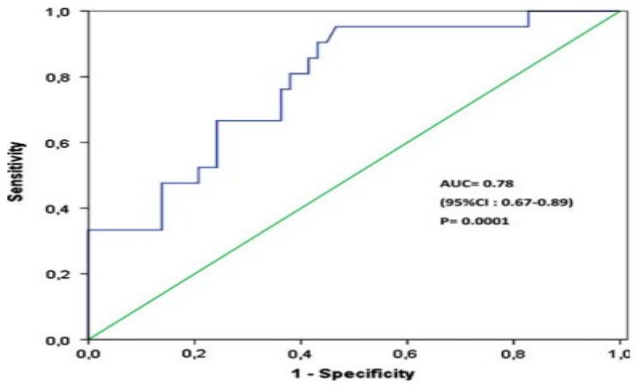


Fig. 2 Area under ROC curve (AUC) for NT-proBNP levels at SBT for predicting post-extubation acute respiratory distress (AUC 0.78)

MÉTHODES DIAGNOSTIQUES

Journal of Research in Clinical Medicine

J Res Clin Med, 2020, 8: 45
doi: 10.34172/jrcm.2020.045
https://jrcm.tbzmed.ac.ir

TUOMS PRESS

Original Article

NT-proBNP levels during spontaneous breathing test and its association with successful weaning in patients undergoing mechanical ventilation in the intensive care unit

Hale Mikaeili[1], Katrin Bioukaghazadeh[2*], Masoud Nazemiyeh[1], Somaieh Matin[3]

[1]Associate Professor of Pulmonary Diseases, Department of Internal Medicine, School of Medicine, Tuberculosis and Lung Disease Research Center, Tabriz University of Medical Sciences, Tabriz, Iran
[2]Department of Internal Medicine (Pulmonary Division), School of Medicine, Tuberculosis and Lung Disease Research Center, Tabriz University of Medical Sciences, Tabriz, Iran
[3]Assistant Professor of Internal Medicine, Department of Internal Medicine, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran

Table 3. Comparison of NT-proBNP levels before and during SBT in patients

Variable	Measuring time	Group	Mean ± SD	*P* value
NT-proBNP	Pre SBT	Successful	26.69 ± 5.43	0.093
		Unsuccessful	4.08 ± 29.22	
	During SBT	Successful	7.15 ± 31.18	0.001
		Unsuccessful	59.61 ± 196.51	

Abbreviation: SD, standard deviation.
P value was reported based on Independent sample *t* test.

MÉTHODES DIAGNOSTIQUES

The predictive value of brain natriuretic peptide or N-terminal pro-brain natriuretic peptide for weaning outcome in mechanical ventilation patients: Evidence from SROC

Journal of the Renin-Angiotensin-Aldosterone System
January–March 2021: 1–12

DOI: 10.1177/1470320321999497
journals.sagepub.com/home/jra
SAGE

Jian Liu[1,2*], Chuan-jiang Wang[2*], Jun-huai Ran[1], Shi-hui Lin[2], Dan Deng[3], Yu Ma[4] and Fang Xu[2]

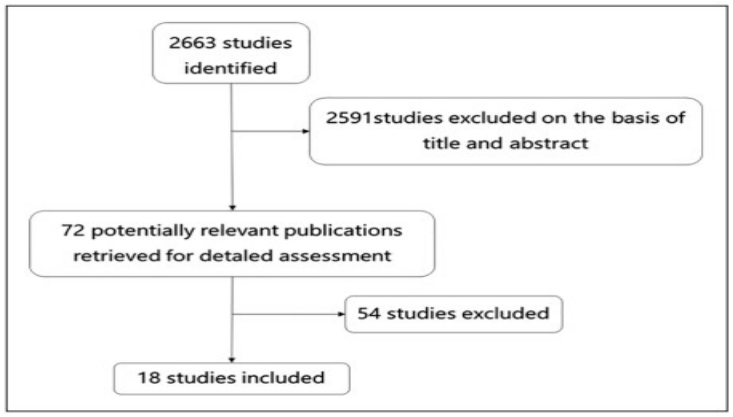
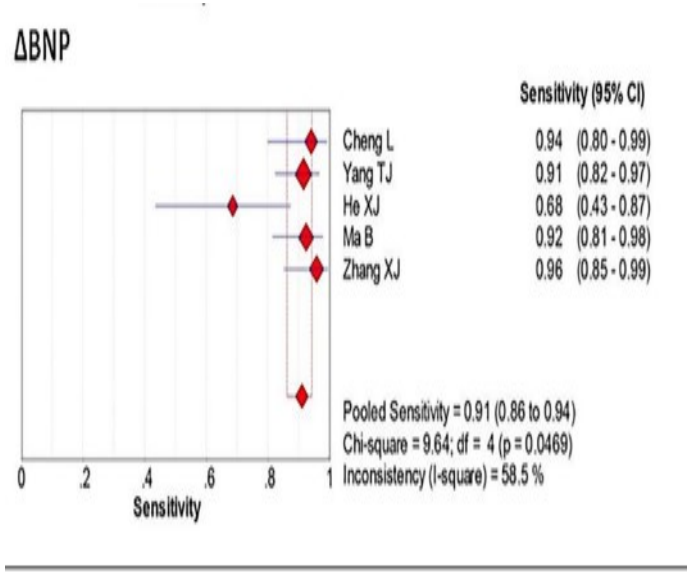


Figure 1. Study flow diagram 2663 articles were retrieved. Finally, 18 articles were included according to pre-set inclusion criteria.

MÉTHODES DIAGNOSTIQUES

Table 1. Key characteristics of the meta-analyzed reports (n = 18).

Index test	Author	Year	Country	Ref.	Cutoff value	TP	FP	FN	TN
BNP1	Armand	2006	France	[10]	275 pg/ml	35	7	6	54
	Xu	2013	China	[44]	263 pg/ml	10	13	2	41
	Xing	2014	China	[42]	849.1 pg/ml	26	9	8	80
	Zhou	2013	China	[46]	204 pg/ml	13	3	3	25
	Ma	2016	China	[40]	294.79 pg/ml	15	10	3	42
	He	2013	China	[45]	139 pg/ml	12	4	5	15
	Total					111	46	27	257
BNP2	He	2013	China	[45]	157 pg/ml	13	4	4	15
	Xing	2014	China	[43]	224.5 pg/ml	40	15	10	93
	Ma	2016	China	[40]	332.95 pg/ml	16	6	2	46
	Shereen	2014	Egypt	[33]	164 pg/ml	9	6	5	10
	Lara	2013	Brazil	[37]	299 pg/ml	11	11	1	78
	Total					89	42	22	242
ΔBNP	Cheng	2015	China	[34]	80 pg/ml	31	12	2	11
	Yang	2011	China	[38]	123 pg/ml	64	1	6	12
	He	2013	China	[45]	29 pg/ml	13	1	6	16
	Ma	2016	China	[40]	69.36 pg/ml	48	2	4	16
	Zhang	2012	China	[47]	46 pg/ml	44	2	2	10
	Total					200	18	20	65
ΔBNP%	Cheng	2015	China	[34]	13.4%	28	4	5	19
	Chien	2008	China	[19]	20%	65	4	6	26
	Sameh	2014	Egypt	[35]	20%	23	2	2	13
	Shereen	2014	Egypt	[33]	14.9%	13	5	3	9
	Total					129	15	16	67
NT-proBNP1	Hu	2010	China	[48]	3635.5 pg/ml	41	16	13	90
	Li	2016	China	[39]	715.5 pg/ml	14	7	1	20
	Total					55	23	14	110
NT-proBNP2	Gang	2013	China	[36]	448 pg/ml	6	7	1	15
	Wen	2015	China	[41]	1199 pg/ml	26	4	8	79
	Total					32	11	9	94



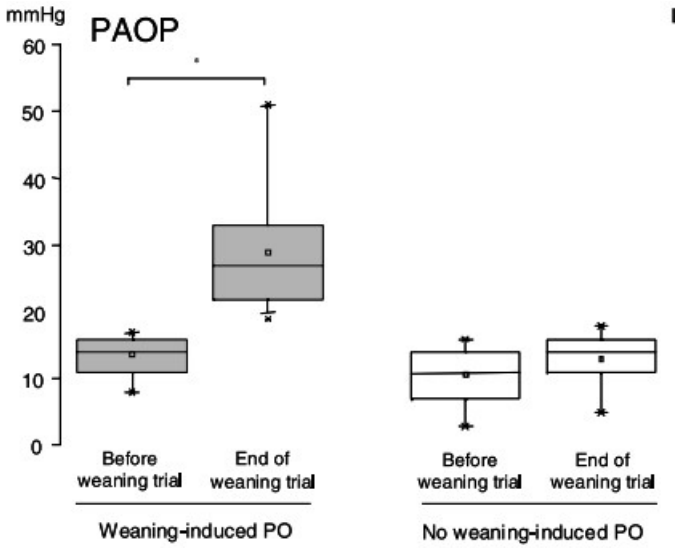
MÉTHODES DIAGNOSTIQUES

Intensive Care Med (2008) 34:1231–1238
DOI 10.1007/s00134-008-1038-3

ORIGINAL

Nadia Anguel
Xavier Monnet
David Osman
Vincent Castelain
Christian Richard
Jean-Louis Teboul

Increase in plasma protein concentration for diagnosing weaning-induced pulmonary oedema



MÉTHODES DIAGNOSTIQUES

Intensive Care Med (2008) 34:1231–1238
DOI 10.1007/s00134-008-1038-3

ORIGINAL

Nadia Anguel
Xavier Monnet
David Osman
Vincent Castelain
Christian Richard
Jean-Louis Teboul

Increase in plasma protein concentration for diagnosing weaning-induced pulmonary oedema

Table 2 Changes of collected variables during the weaning trial

	Patients with weaning-induced-PO ($n=24$)		Patients without weaning-induced-PO ($n=22$)	
	Before the weaning trial	At the end of weaning trial	Before the weaning trial	At the end of weaning trial
Heart rate (beats/min)	93 (66–136)	111 (82–146) *	92 (63–131)	101 (72–142) *
Systolic arterial blood pressure (mmHg)	131 (97–185)	152 (113–245) *	140 (97–188)	165 (99–191) *
Diastolic arterial bbod pressure (mmHg)	60 (48–90)	72 (52–112) *	65 (44–93)	73 (45–105) *
Mean arterial blood pressure (mmHg)	85 (63–132)	103 (72–155) *	98 (65–122)	101 (64–131) *
Cardiac index (L/min/m^2)	3.6 (2.1–5.6)	3.7 (2.0–6.0) *	3.3 (2.4–7.7)	3.8 (2.9–9.4) *
Systolic pulmonary artery pressure (mmHg)	43 (25–54)	64 (40–112) *	33 (14–59) #	31 (14–69)
Diastolic pulmonary artery pressure (mmHg)	22 (13–32)	32 (21–59) *	17 (6–30) #	16 (6–35)
Mean pulmonary artery pressure (mmHg)	29 (19–40)	44 (27–77) *	23 (9–39) #	21 (9–46)
Pulmonary artery occlusion pressure (mmHg)	13 (7–16)	26 (18–50) *	10 (2–15) #	13 (4–17) *
Mixed venous oxygen saturation (%)	67 (58–82)	63 (45–73) *	67 (50–79)	64 (50–78)
PaO_2 (mmHg)	90 (67–201)	66 (46–118) *	91 (62–175)	73 (53–136) *
$PaCO_2$ (mmHg)	40 (31–58)	50 (35–78) *	36 (29–55)	40 (30–61) *
Respiratory rate (breaths/min)	20 (17–28)	35 (28–60) *	21 (18–28)	30 (20–44) *
Plasma protein concentration (g/L)	52 (46–66)	59 (50–74) *	62 (44–79) #	64 (45–79)
Hemoglobin concentration (g/dL)	8.9 (6.4–12.8)	9.6 (7.2–13.7) *	9.1 (6.3–13.2)	9.8 (6.1–13.4)

PO, pulmonary oedema; * $p<0.05$ vs. before weaning trial; # $p<0.05$ vs. patients with weaning-induced pulmonary oedema

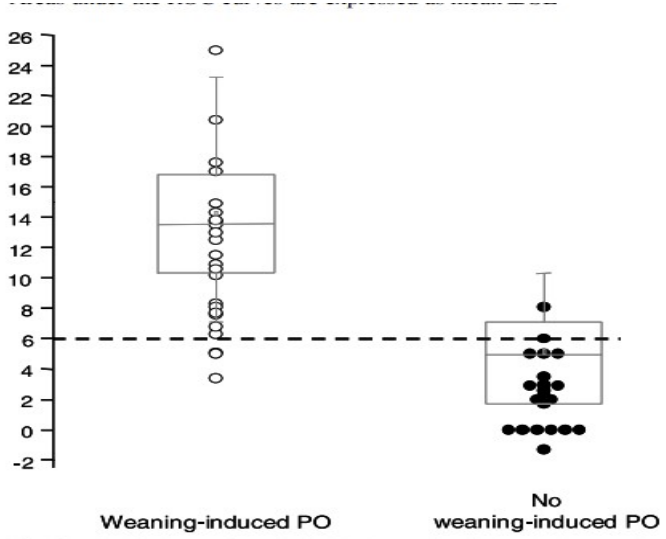


Fig. 2 Distribution of the individual weaning-induced changes in plasma protein concentration on each side of the cut-off diagnostic value (*dashed line*) in patients with and without weaning-induced pulmonary oedema (PO)

MÉTHODES DIAGNOSTIQUES

Liu *et al. Critical Care* (2016) 20:369
DOI 10.1186/s13054-016-1533-9

Critical Care

RESEARCH Open Access

Cardiac dysfunction induced by weaning from mechanical ventilation: incidence, risk factors, and effects of fluid removal

Jinglun Liu[1,2,3,4†], Feng Shen[1,2,3,5†], Jean-Louis Teboul[1,2,3], Nadia Anguel[1,2,3], Alexandra Beurton[1,2,3], Nadia Bezaz[1,2,3], Christian Richard[1,2,3] and Xavier Monnet[1,2,3*]

Table 6 Biological variables and electrocardiogram before and at the end of SBT

			P values				
	Baseline	At the end of SBT (except for troponin Ic, measured at 4 h)	At the end of SBT vs. baseline	Succeeded SBT vs. failed SBT at baseline	Succeeded SBT vs. failed SBT at the end of SBT	Cases with WiPO vs. cases without WiPO at baseline	Cases with WiPO vs. cases without WiPO at the end of SBT
$PaCO_2$ (mmHg)							
Succeeded SBT ($n = 155$)	37 ± 7	38 ± 7					
Failed SBT ($n = 124$)	40 ± 8	46 ± 17	<0.01	<0.01	<0.01		
Cases with WiPO ($n = 75$)	41 ± 9	50 ± 18	<0.01				
Cases without WiPO ($n = 49$)	39 ± 7	41 ± 12				0.11	0.01
PaO_2 (mmHg)							
Succeeded SBT ($n = 155$)	105 ± 27	97 ± 37	0.03				
Failed SBT ($n = 124$)	96 ± 22	72 ± 17	<0.01	<0.01	<0.01		
Cases with WiPO ($n = 75$)	93 ± 17	71 ± 16	<0.01				
Cases without WiPO ($n = 49$)	101 ± 27	74 ± 20	<0.01			0.05	0.52
Haemoglobin (g/dL)							
Succeeded SBT ($n = 155$)	9.9 ± 1.4	10.0 ± 1.5					
Failed SBT ($n = 124$)	9.4 ± 1.4	10.0 ± 1.5	<0.01	<0.01	0.81		
Cases with WiPO ($n = 75$)	9.1 ± 1.2	10.2 ± 1.3	<0.01				
Cases without WiPO ($n = 49$)	9.7 ± 1.5	9.5 ± 1.6				0.04	0.02
Plasma protein concentration (g/L)							
Succeeded SBT ($n = 155$)	58 ± 11	59 ± 11	0.01				
Failed SBT ($n = 124$)	55 ± 9	57 ± 9	<0.01	0.02	0.19		
Cases with WiPO ($n = 75$)	53 ± 9	58 ± 10	<0.01				
Cases without WiPO ($n = 49$)	58 ± 9	57 ± 8				0.00	0.60
Troponin Ic (ng/mL)							
Succeeded SBT ($n = 155$)	0.07 ± 0.13	0.09 ± 0.06	0.08				
Failed SBT ($n = 124$)	0.10 ± 0.08	0.10 ± 0.06	1.00	0.03	0.17		
Cases with WiPO ($n = 75$)	0.11 ± 0.08	0.11 ± 0.08	1.00				
Cases without WiPO ($n = 49$)	0.07 ± 0.10	0.09 ± 0.09	0.30			0.02	0.20
Patients with increase in troponin Ic >0.5 ng/mL							
Succeeded SBT ($n = 155$)	–	0 (0 %)					

Traitement

1-Diuretique

2- Vasodilatateurs

3-levosimendan

4- contrôle de HTA

5-traitement non pharmacologique

Traitement

1-Diuretique

2-Vasodilatateurs

3-levosimendan

4-contrôle de HTA

5-traitement non pharmacologique

TRAITEMENT

Anesthesiology
69:171–179, 1988

Acute Left Ventricular Dysfunction during Unsuccessful Weaning from Mechanical Ventilation

Francois Lemaire, M.D., Jean-Louis Teboul, M.D.,† Luc Cinotti, M.D.,‡ Guillen Giotto, M.D.,§ Fekri Abrouk, M.D.,§ Gabriel Steg, M.D.,§ Isabelle Macquin-Mavier, M.D.,¶ Warren M. Zapol, M.D.***

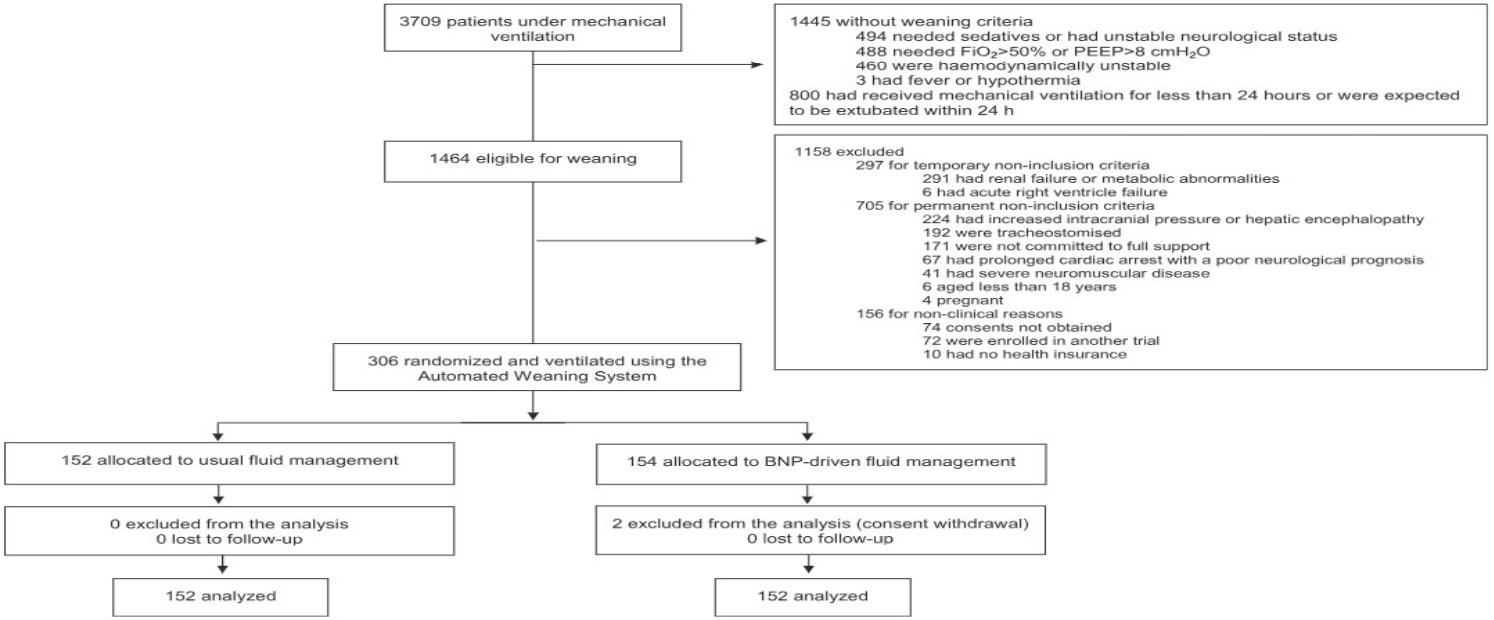
9/15 patients traités par furosemide sevrés après une semaine après perte de poids: 5 Kg

TRAITEMENT

Natriuretic Peptide–driven Fluid Management during Ventilator Weaning

A Randomized Controlled Trial

Armand Mekontso Dessap[1,2,3], Ferran Roche-Campo[1,4], Achille Kouatchet[5], Vinko Tomicic[6], Gaetan Beduneau[7], Romain Sonneville[8], Belen Cabello[4], Samir Jaber[9], Elie Azoulay[10], Diego Castanares-Zapatero[11], Jerome Devaquet[12], François Lellouche[13], Sandrine Katsahian[14], and Laurent Brochard[1,2,3,15]



TRAITEMENT

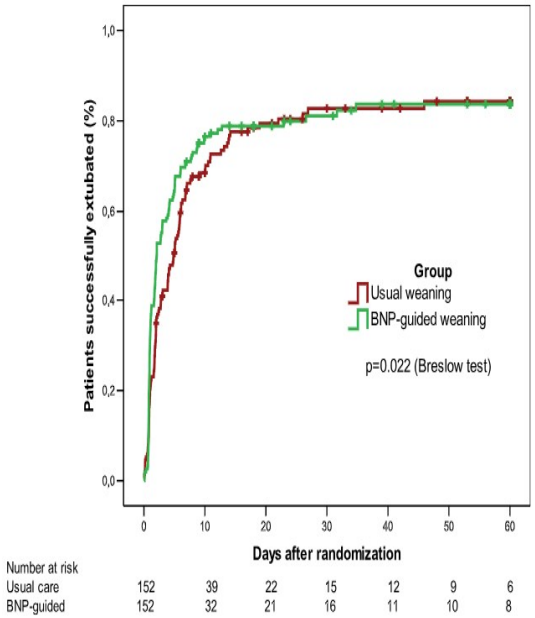


Figure 2. Probability of successful extubation within 60 days after randomization. BNP = B-type natriuretic peptide.

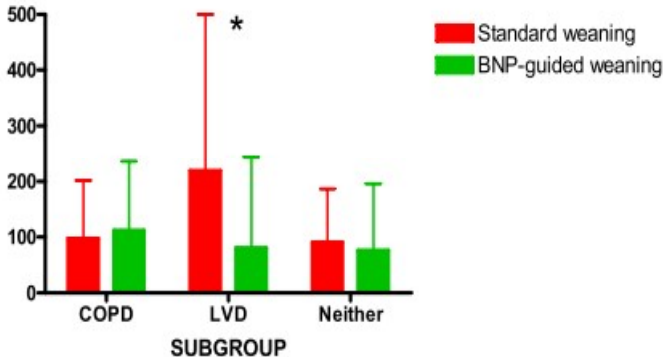


Figure 3. Mean and standard deviation for time (in hours) to first extubation (*top*), time (in hours) to successful extubation (*middle*), and time (in hours) to successful weaning from invasive and noninvasive ventilation (*bottom*) in patients with chronic obstructive pulmonary disease, left ventricular systolic dysfunction, or neither. BNP = B-type natriuretic peptide; COPD = chronic obstructive pulmonary disease; LVD = left ventricular systolic dysfunction; neither = no COPD or LVD. *$P < 0.05$ between the usual care and BNP-guided groups (Mann-Whitney test).

Traitement

1-Diuretique

2-Vasodilatateurs

3-levosimendan

4-contrôle de HTA

5-traitement non pharmacologique

Traitement

1-Diuretique

2-Vasodilatateurs

3-levosimendan

4-contrôle de HTA

5-traitement non pharmacologique

TRAITEMENT

Journal of Critical Care (2011) 26, 15–21

ELSEVIER

Journal of Critical Care

Weaning difficult-to-wean chronic obstructive pulmonary disease patients: A pilot study comparing initial hemodynamic effects of levosimendan and dobutamine

Lamia Ouanes-Besbes [a], Islem Ouanes [a], Fahmi Dachraoui [a], Saoussen Dimassi [a], Alexandre Mebazaa [b], Fekri Abroug MD [a,*]

[a] *Intensive Care Unit, CHU Fatouma Bourguiba, 5000 Monastir, Tunisia*
[b] *Department of Anesthesiology and Critical Care Medicine, Hopital Lariboisière, Paris, France*

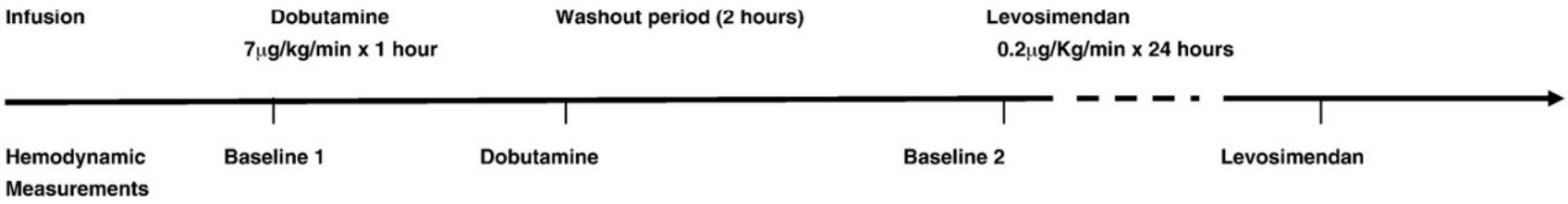


Fig. 1 Protocol.

TRAITEMENT

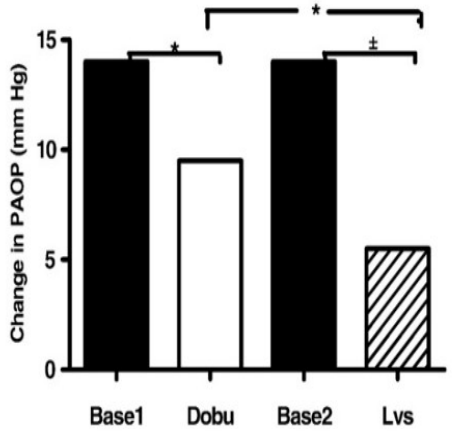


Fig. 3 Change of PAOP between MV and SV before and after

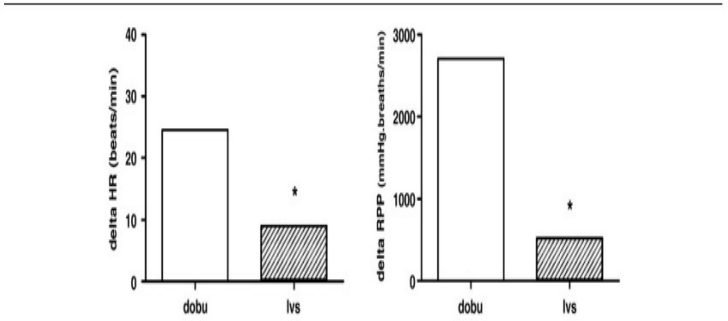


Fig. 2 Comparison of respective effects of dobutamine and levosimendan on variation of heart rate and RPP in patients while under MV.
*$P < .05$.

Table 3 Hemodynamic parameters recorded under mechanical and spontaneous ventilation at the study time-points

Parameters median (IQR)	Baseline 1		Dobutamine		Baseline 2		Levosimendan	
	MV	SV	MV	SV	MV	SV	MV	SV
HR (beats/min)	89 (20)	100 (32)*	113 (23)†	116 (26)	90 (20)	99 (34)*	99 (16)†	106 (26)
RAP (mm Hg)	10 (4)	15 (6)*	11 (5)	14,5 (7)*	12 (4)	14 (6)*	10(6)	13 (6)*
MPAP (mm Hg)	32 (8)	46 (12)*	31 (6)	45 (11)*	31 (8)	45 (9)*	27 (7)†	37 (12)*
PAOP (mm Hg)	15 (6)	29 (9)*	14 (5)	23 (7)*	15 (5)	29 (12)*	12 (7)†	17 (10)‡
MAP (mm Hg)	83 (16)	104 (29)*	89 (26)	101 (22)	77 (19)	108 (18)*	80 (12)	90 (14)*
RPP (mm Hg.beats per minute)	7,974 (1,845)	9,797 (3,469)*	10,680 (3,264)†	12,178 (2,569)*	7,296 (2,320)	9,865 (5,067)	7,817 (1833)	9,330 (2,977)*
CI (L/min per m^2)	3.14 (1.06)	4.14 (2.05)*	3.27 (2.35)	4.73 (2.64)*	3.16 (0.97)	4.08 (1.84)*	3.52 (1.25)	4.28 (1.72)*
SVI (mL/min per m^2)	36 (17)	45 (18)*	34 (19)	43 (12)*	37 (17)	44 (17)	34 (18)	49 (19)
SVR (IU)	25 (10)	24 (9)	22 (9)	17 (10)*	25 (7)	23 (7)	20 (11)	19 (6)
pH	7.37 (0.11)	7.30 (0.10)*	7.40 (0.09)	7.32 (0.14)*	7.38 (0.09)	7.30 (0.09)*	7.39 (0.08)	7.39 (0.03)

SVR, systemic vascular resistance.
* $P < .05$ for spontaneous versus mechanical ventilation.
† $P < .05$ for mechanical ventilation at baseline and following administration of either study drugs.

TRAITEMENT

Hindawi
Critical Care Research and Practice
Volume 2019, Article ID 7169492, 8 pages
https://doi.org/10.1155/2019/7169492

Research Article

Contribution of Levosimendan in Weaning from Mechanical Ventilation in Patients with Left Ventricular Dysfunction: A Pilot Study

Ifigeneia Kaltsi,[1] Epameinondas Angelopoulos,[1] Georgios Tzanis,[1,2] Antonios Sideris,[3] Konstantinos Tyrovolas,[3] Stelios Kokkoris,[1] Christina Gratziou,[1] Serafeim Nanas,[1] and Christina Routsi[1]

[1]*Intensive Care Unit, Medical School, National and Kapodistrian University of Athens, "Evangelismos" Hospital, Athens, Greece*
[2]*Unit of Cardiovascular Interventions, IRCCS San Raffaele Scientific Institute, Milan, Italy*
[3]*Coronary Care Unit, Department of Cardiology, "Evangelismos" Hospital, Athens, Greece*

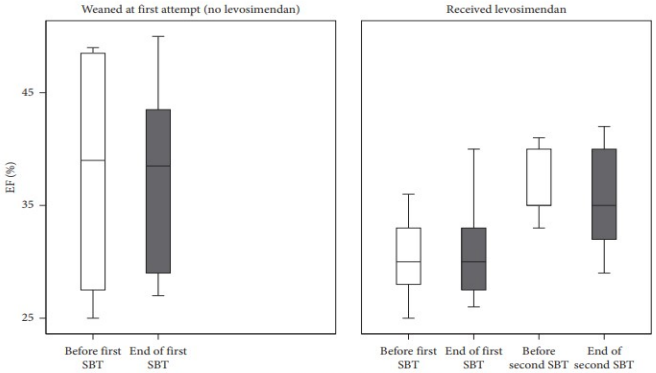


FIGURE 1: Left ventricular ejection fraction (LVEF) before the start (white boxes) and at the end (grey boxes) of spontaneous weaning trials in successfully weaned patients (a) and in those who failed and received levosimendan (b). After levosimendan administration, LVEF increased.

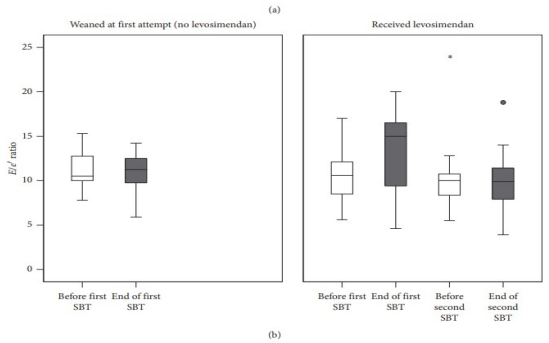


FIGURE 2: Tissue Doppler e' wave (a) and E/e' ratio (b) before (white boxes) and at the end (grey boxes) of SBTs in successfully weaned patients (left panel) and in those who failed and received levosimendan (right panel). After levosimendan administration, end-SBT e' velocity increased and the E/e' ratio was maintained constant throughout the SBT, whereas it had increased during the first SBT.

Traitement

1-Diuretique

2-Vasodilatateurs

3-levosimendan

4-contrôle de HTA

5-traitement non pharmacologique

TRAITEMENT

Eur Respir J 2007; 29: 1033–1056
DOI: 10.1183/09031936.00010206

TASK FORCE

Weaning from mechanical ventilation

J-M. Boles*, J. Bion#, A. Connors¶, M. Herridge+, B. Marsh§, C. Melot‡, R. Pearl**, H. Silverman##, M. Stanchina¶¶, A. Vieillard-Baron++, T. Welte§§

Statement of the Sixth International Consensus Conference on Intensive Care Medicine

Organised jointly by the European Respiratory Society (ERS), the American Thoracic Society (ATS), the European Society of Intensive Care Medicine (ESICM), the Society of Critical Care Medicine (SCCM) and the Société de Réanimation de Langue Française (SRLF), and approved by the ERS Executive Committee, February 2007

TABLE 6 Failure criteria of spontaneous breathing trials

Clinical assessment and subjective indices	Agitation and anxiety
	Depressed mental status
	Diaphoresis
	Cyanosis
	Evidence of increasing effort
	Increased accessory muscle activity
	Facial signs of distress
	Dyspnoea
Objective measurements	Pa,O_2 ≤50–60 mmHg on Fi,O_2 ≥0.5 or Sa,O_2 <90%
	Pa,CO_2 >50 mmHg or an increase in Pa,CO_2 >8 mmHg
	pH <7.32 or a decrease in pH ≥0.07 pH units
	f_R/V_T >105 breaths·min^{-1}·L^{-1}
	f_R >35 breaths·min^{-1} or increased by ≥50%
	f_C >140 beats·min^{-1} or increased by ≥20%
	Systolic BP >180 mmHg or increased by ≥20%
	Systolic BP <90 mmHg
	Cardiac arrhythmias

Data taken from [16, 18, 19, 62, 116]. Pa,O_2: arterial oxygen tension; Fi,O_2: inspiratory oxygen fraction; Sa,O_2: arterial oxygen saturation; Pa,CO_2: arterial carbon dioxide tension; f_R: respiratory frequency; V_T: tidal volume; f_C: cardiac frequency; BP: blood pressure. 1 mmHg=0.133 kPa.

Traitement

1-Diuretique

2-Vasodilatateurs

3-levosimendan

4-contrôle de HTA

5-traitement non pharmacologique

TRAITEMENT

Noninvasive ventilation to prevent respiratory failure after extubation in high-risk patients*

Stefano Nava; Cesare Gregoretti; Francesco Fanfulla; Enzo Squadrone; Mario Grassi; Annalisa Carlucci; Fabio Beltrame; Paolo Navalesi

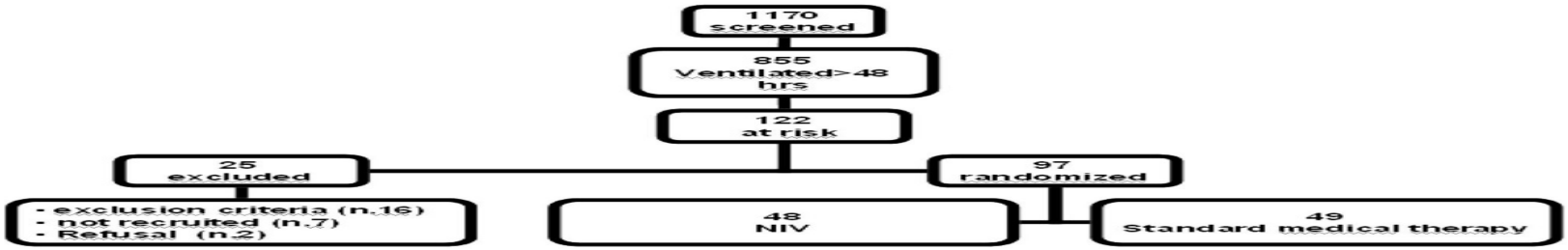


Table 5. Risk difference of univariate and multivariate equations calculated with the generalized linear models

Response Variable Y	Predictor Variable X, n (%)		Risk Difference, %	95% CI	*p* Value
Univariate					
Reintubation	NIV 4/48 (8)	No NIV 12/49 (24)	−16	(−2, −31)	.027
ICU mortality	NIV 3/48 (6)	No NIV 9/49 (18)	−12	(−25, +0.7)	.064
ICU mortality	Reintubation 10/16 (63)	No reintubation 2/81 (3)	+60	(+36, +84)	<.001
Multivariate					
Reintubation	NIV 4/48 (8)	No NIV 12/49 (24)	−16	(−2, −31)	.027
ICU mortality	NIV 6/48 (12)	No NIV 6/49 (13)	−1	(−8, +6)	.845
ICU mortality	Reintubation 10/16 (62)	No reintubation 2/81 (3)	+60	(+37, +83)	<.001

CI, confidence interval; NIV, noninvasive ventilation; ICU, intensive care unit.

TRAITEMENT

Research Article

Targeted-Volume Noninvasive Ventilation Reduces Extubation Failure in Postextubated Medical Intensive Care Unit Patients: A Randomized Controlled Trial

Vorawut Thanthitaweewat[1], Dittapol Muntham[2,3], Naricha Chirakalwasan[1,2]

[1]Department of Medicine, Division of Pulmonary and Critical Care medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand,
[2]Excellence Center for Sleep Disorders, King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Bangkok, Thailand,
[3]Faculty of Science and Technology, Rajamangala University of Technology Suvarnabhumi, Phranakhon Si Ayutthaya, Thailand

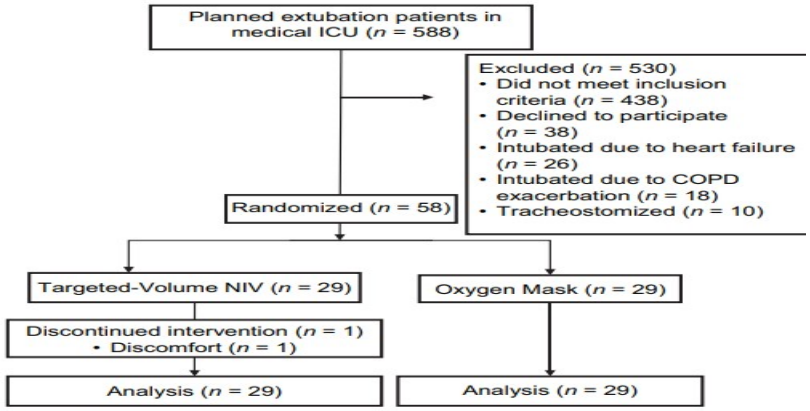
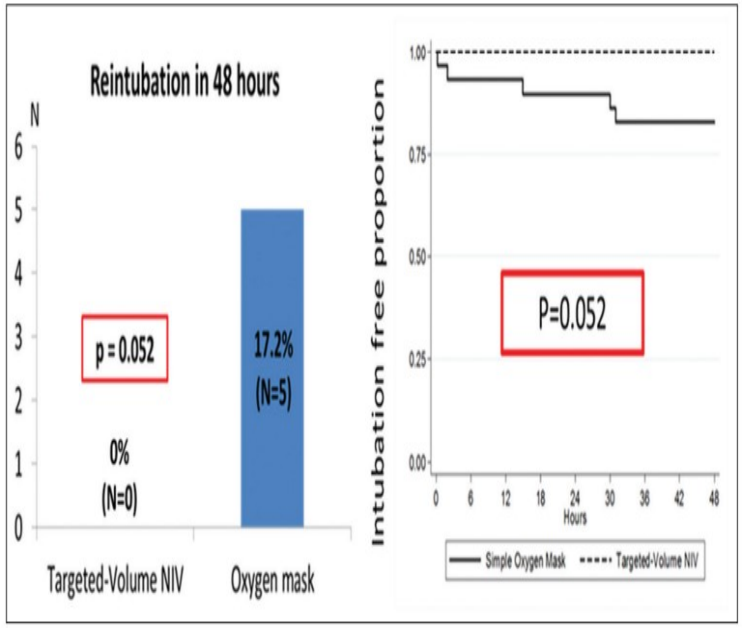
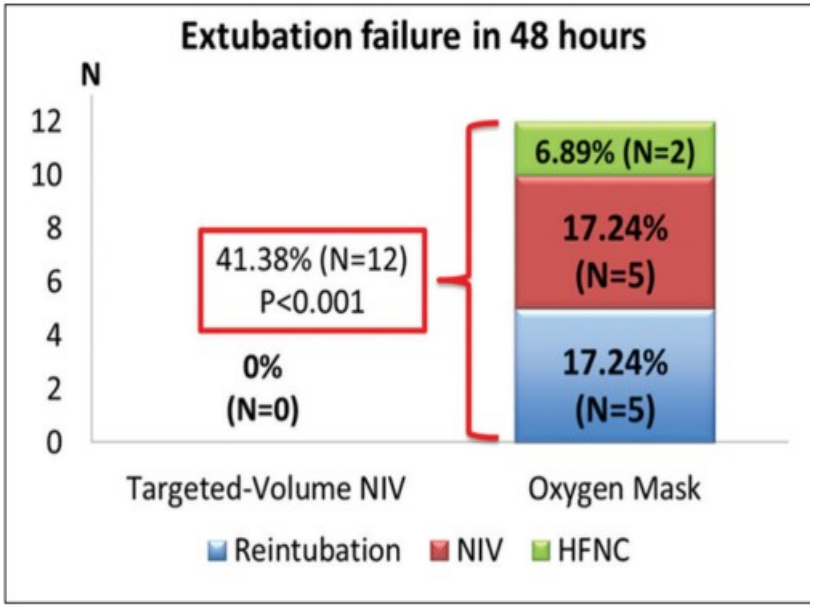


Figure 1: Flow of the study

TRAITEMENT

Thanthitaweewat, *et al.*: Targeted-volume noninvasive ventilation reduces extubation failure





TRAITEMENT

Research

JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

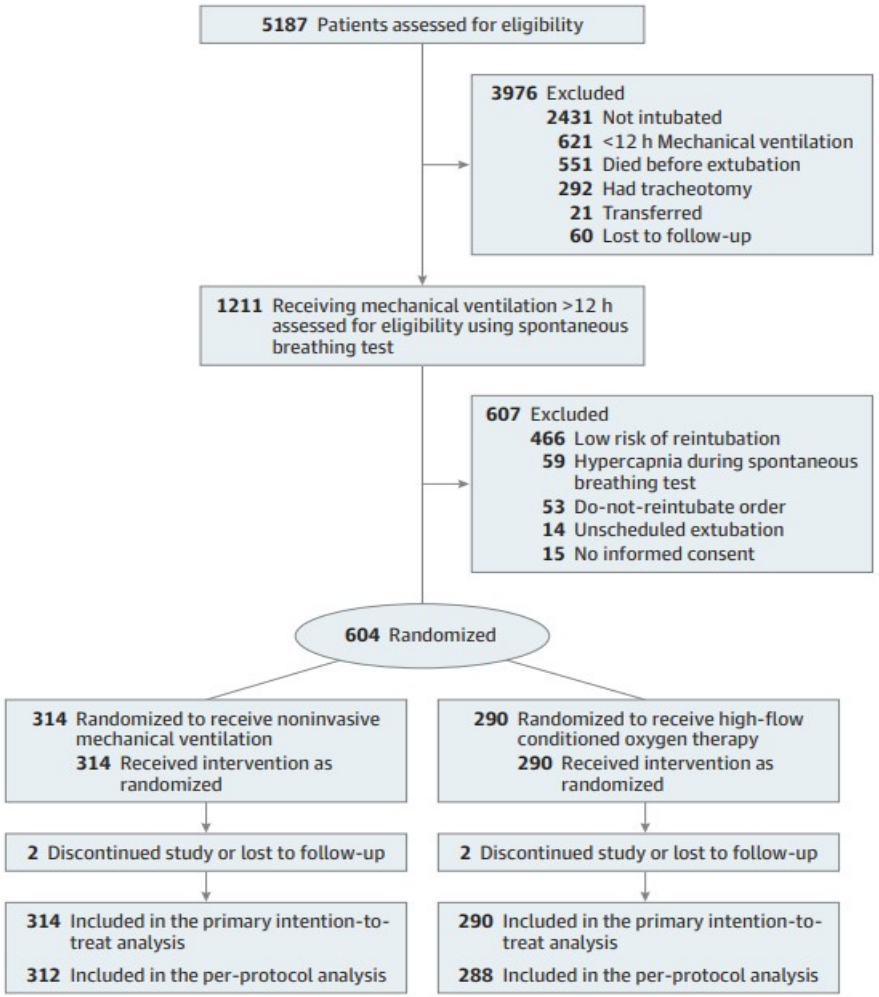
Effect of Postextubation High-Flow Nasal Cannula vs Noninvasive Ventilation on Reintubation and Postextubation Respiratory Failure in High-Risk Patients

A Randomized Clinical Trial

Gonzalo Hernández, MD, PhD; Concepción Vaquero, MD; Laura Colinas, MD; Rafael Cuena, MD; Paloma González, MD; Alfonso Canabal, MD, PhD; Susana Sanchez, MD; Maria Luisa Rodriguez, MD; Ana Villasclaras, MD; Rafael Fernández, MD, PhD

TRAITEMENT

Figure 1. Flowchart of Participants in a Study of Postextubation High-Flow Conditioned Oxygen vs Noninvasive Mechanical Ventilation for Preventing Reintubation in High-Risk Patients



TRAITEMENT

Table 2. Primary and Secondary Outcomes

	No. (%)		
	Noninvasive Mechanical Ventilation (n = 314)	High-Flow Conditioned Oxygen Therapy (n = 290)	Difference Between Groups (95% CI)[a]
Primary outcome			
All-cause reintubation[b]	60 (19.1)	66 (22.8)	−3.7 (−9.1 to ∞)[c]
Postextubation respiratory failure[b]	125 (39.8)	78 (26.9)	12.9 (6.6 to ∞)[c]
Secondary Outcomes			
Causes of postextubation respiratory failure			*P* = .89[d]
Respiratory acidosis[e]	21 (6.7)	11 (3.8)	
Hypoxia[f]	19 (6.1)	12 (4.1)	
Unbearable dyspnea	26 (8.3)	21 (7.2)	
Decreased level of consciousness	7 (2.2)	4 (1.4)	
Inability to clear secretions	52 (16.6)	30 (10.3)	
Causes for reintubation			*P* = .28[d]
Cardiorespiratory arrest	3 (1)	3 (1)	
Agitation	1 (0.3)	3 (1)	
Inability to clear secretions	20 (6.4)	13 (4.5)	
Hemodynamic impairment[g]	10 (3.2)	14 (4.8)	
Persistent postextubation respiratory failure[f]	16 (5.1)	16 (5.5)	
Nonrespiratory causes for reintubation			
Surgery	4 (1.3)	2 (0.7)	
Low level of consciousness[h]	6 (1.9)	15 (5.2)	
Adverse events[i]	135 (42.9)	0 (0)	*P* < .001
Sepsis	4 (1.3)	6 (2.1)	−0.8 (−3.3 to 1.5)[d,j]
Multiorgan failure	5 (1.6)	5 (1.7)	−0.1 (−2.6 to 2.2)[d,j]
Respiratory infection	34 (10.8)	23 (7.9)	2.9 (−1.8 to 7.6)[j]
Ventilator-associated tracheobronchitis	18 (5.7)	11 (3.8)	1.9 (−1.6 to 5.5)[j]
Ventilator-associated pneumonia	17 (5.4)	12 (4.1)	1.3 (−2.3 to 4.8)[j]
Time to reintubation, median (IQR), h	21.5 (10 to 47)	26.5 (14 to 39)	−5 (−34 to 24)[j,k]
ICU length of stay, median (IQR), d	4 (2 to 9)	3 (2 to 7)	1 (−0.1 to 2.1)[k,l]
Hospital length of stay, median (IQR), d	26 (16 to 37)	23 (14 to 46)	3 (−6.8 to −0.8)[k,l]
Mortality			
ICU	18 (5.7)	19 (6.6)	−0.8 (−4.9 to 3.1)[j]
Hospital	56 (17.8)	59 (20.3)	−2.5 (−8.8 to 3.8)[d,j]

TRAITEMENT

Intensive Care Med (2011) 37:1223–1224
DOI 10.1007/s00134-011-2186-4

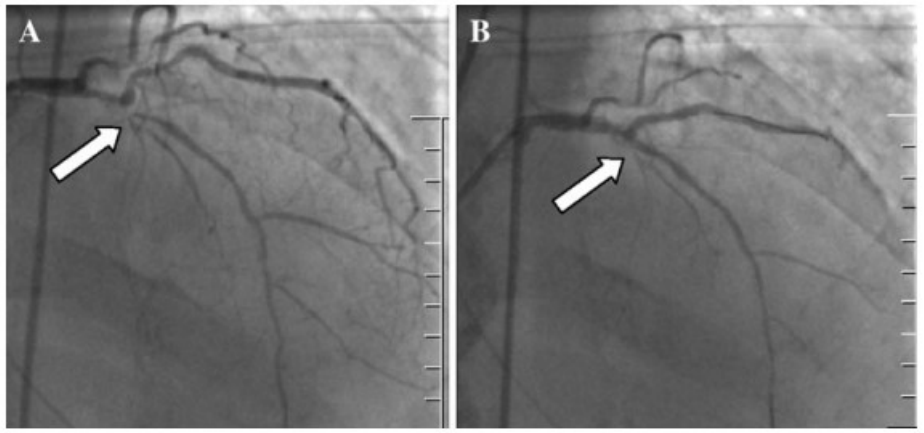
C. Carrié
H. N. Bui
E. Gerbaud
F. Vargas
G. Hilbert

Myocardial ischaemia and weaning failure: is angioplasty the heart of the problem?

Table 1 Evolution of troponin and BNP levels, and values of LVEF and filling pressures in major cardiovascular events during hospitalization

	Admission (day 0)	First weaning process (day 10)	Reintubation (day 14)	Second weaning process (day 21)	Before angioplasty (day 25)	After angioplasty (day 30)
BNP (pg/ml)	221	1,831	3,830	3,363	2,990	1,400
Troponin (ng/ml)	0.04	0.4	1.5	6	2.75	0.8
LVEF (%)	40	40	30	30	30	40
E/e′	10	11	15	15	14	11

E/e′ ratio of E and e′ waves for evaluation of left ventricular filling pressures



TRAITEMENT

Intensive Care Med (1997) 23: 889–892

BRIEF REPORT

M. Boussarsar
L. Besbes
H. Gamra
S. Nouira
S. Elatrous
F. Betbout
M. Ben Farhat
F. Abroug

Successful weaning from mechanical ventilation following balloon mitral commissurotomy

Table 2 Hemodynamic and oxygenation variables before and after BMC (*LAP* left atrial pressure, *LA-LV* left atrial to left ventricular pressure gradient, *sPAP* systolic pulmonary artery pressure, *CI* cardiac index, *Sa/vO_2* arterial and venous oxygen saturation, *D_{O2}* oxygen delivery, *E_{O2}* oxygen extraction)

	Before BMC	After BMC
LAP (mm Hg)	22	12
LA-LV (mm Hg)	12	2
sPAP (mm Hg)	65	55
MAP (mm Hg)	90	95
HR (beat/min)	95	97
CI (l/min/m^2)	3.52	4.1
Sa/vO_2 (%)	91/58	98/76
D_{O2} (ml/m^2)	509	541
E_{O2} (%)	30	26


Merci!