17º CONGRESO BARCELONA

SCT BCN

22-24 marzo 2023

SOCIETAT CATALANA DE TRASPLANTAMENT

Estudio MI-Edon: el papel de la fisioterapia respiratoria como herramientas para la optimización del donante pulmonar.

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Table 1. Ventilation Variables and Mucus Displacement Achieved During the Standard and Optimized MI-E Maneuvers

Variable	Standard MI-E Maneuver	Optimized MI-E Maneuver	*P*
+IP, cm H_2O	38.5 (30.0–41.8)	38.8 (30.6–41.1)	.79
−EP, cm H_2O	51.1 (59.8–40.7)	50.3 (60.7–41.0)	.93
PEF, L/min	153.6 (167.5–124.8)	136.8 (157.1–108.0)	.042
PIF, L/min	101.8 (89.1–115.7)	37.5 (24.9–47.9)	<.001
V_T, mL	1494 (900–1630)	1480 (672–1597)	.28
T_I, s	2.94 (2.87–3.06)	5.22 (4.09–5.70)	<.001
PEF:PIF	1.44 (1.30–1.56)	4.03 (2.32–5.90)	<.001
PEF-PIF difference, L/min	44.9 (30.8–58.4)	111.5 (59.1–117.0)	<.001
Mucus CMD, cm	1.13 (0.54–1.51)	3.75 (2.68–4.17)	<.001

Volpe MS, et al. Respir Care. 2018 Oct;63(10):1214-1222.

Characteristic	Intervention Group (n = 90)	Control Group (n = 90)	*P*
Primary outcome, mean ± SD			
Weight of aspirated secretion, g	2.42 ± 2.32	1.35 ± 1.56	<.001
Secondary outcomes, mean ± SD			
ΔC_L, mL/cm H_2O*	1.76 ± 4.90	−0.57 ± 4.85	.001
ΔR_{aw}, cm H_2O/L/s*	0 ± 3.48	0.22 ± 3.25	.59
ΔWOB, J/L	−0.03 ± 0.16	−0.03 ± 0.15	.57

* The ventilatory mode was briefly changed to constant-flow, volume-controlled ventilation for these measurements.
C_L = static lung compliance
R_{aw} = airway resistance
WOB = work of breathing

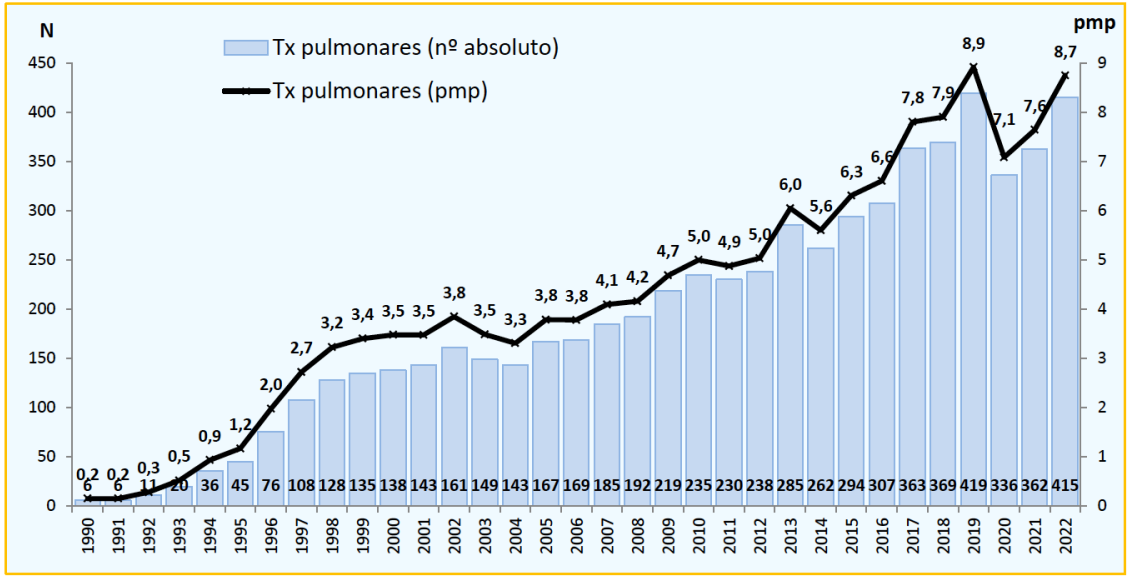
Ferreira et al. Respir Care 2018;63(12):1471–1477

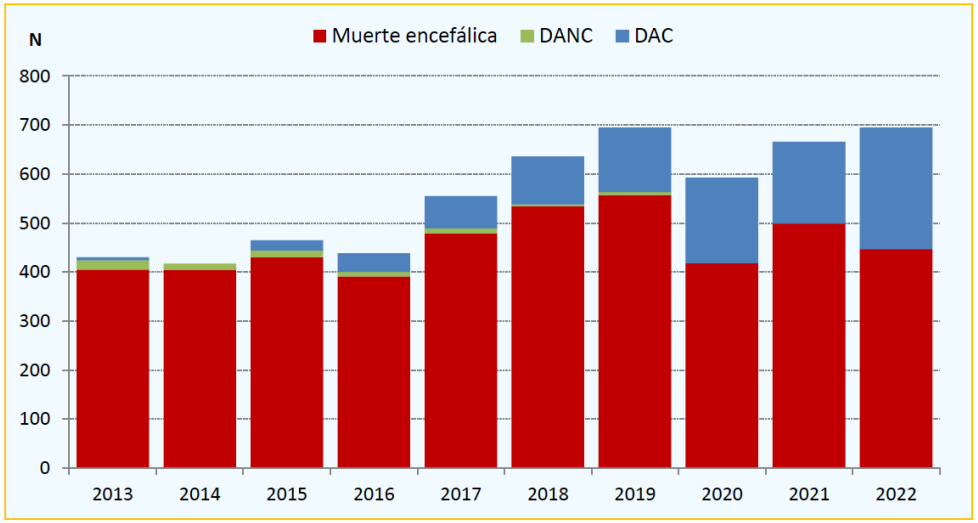
Table 2 Baseline and follow-up respiratory and hemodynamic parameters

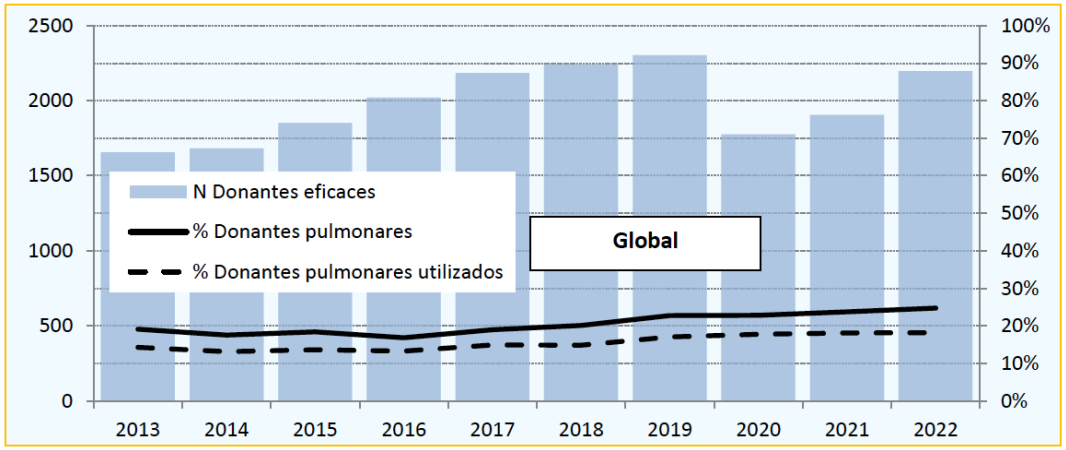
	Baseline	5′	60″	*p*
Temperature, °C	37.3 ± 0.82		37.4 ± 0.7	ns
Heart rate, bpm	97.7 ± 14.4	97.1 ± 15.1	97.3 ± 14.2	0.82
Mean blood pressure, mmHg	87 ± 11.9	87.6 ± 14.7	83.6 ± 14.7	0.57
Sat O_2, %	97.38 ± 2.37	98.3 ± 2.2	97 ± 3.4	0.04
pHa	7.43 ± 0.1	7.38 ± 0.1	7.45 ± 0.05	0.17
pHv	7.39 ± 0.1	7.44 ± 0.02	7.42 ± 0.05	0.13
PaO_2, mmHg	105.5 ± 23.9	124 ± 55.5	*143 ± 42.3	0.031
PvO_2, mmHg	54.9 ± 37.4	34.5 ± 4.9	52.4 ± 29	0.67
$PaCO_2$, mmHg	37.5 ± 12.6	40.5 ± 13.3	35.2 ± 8.2	0.058
$PvCO_2$, mmHg	45.2 ± 6.7	44.5 ± 3.5	40.2 ± 5.2	0.15
Ventilator mode				0.61
CPAP PC-IMV	20		18	
MMV VC-IMV	2		1	
Spontaneous respiration	4		7	
FiO_2	0.46 ± 0.13	0.45 ± 0.13	0.44 ± 0.1	0.73
PaO_2/FiO_2	239.8 ± 96.8	285.5 ± 140	328.7 ± 104.7	0.14
PvO_2/FiO_2	134.9 ± 114.2	105.9 ± 3.7	132.6 ± 93.9	0.96
Total breath, rate/min	22.1 ± 6.3	23.5 ± 7.1	20.7 ± 5.9	0.10
Minute volume, l/min	10.6 ± 3.6	11.0 ± 3.2	9.6 ± 2.6	0.13
Tidal volume, ml	524.1 ± 106.6	496.3 ± 118.4	493.2 ± 139	0.15
PEEP, mmHg	5.3 ± 2.9	5.3 ± 2.9	4.6 ± 3.2	0.45
Peak inspiratory pressure, cmH_2O	23.6 ± 7.8	24.0 ± 8.1	22.3 ± 5.6	0.17
Plateau pressure, cmH_2O	21.9 ± 5.1	22.5 ± 5.4	20.9 ± 4.4	0.14
Lung compliance				
Dynamic	17.7 ± 9.5	16.3 ± 9.4	17.6 ± 9.6	0.4
Static, ml/cmH_2O	18.7 ± 8.8	17.2 ± 9.1	19.1 ± 9.3	0.33
CA tidal volume, ml	1043.6 ± 649.9			

Bpm beats per minute, *Sat O_2* pulse-oximetry oxygen saturation, *pHa* arterial pH, *pHv* venous pH, *PaO_2* arterial oxygen partial pressure, *PvO_2* venous oxygen partial pressure, *$PaCO_2$* arterial CO2 partial pressure, *$PvCO_2$* venous CO_2 partial pressure, *CPAP* assisted pressure ventilation, *MMV* minimal mandatory ventilation, *BiPAP* controlled pressure mandatory ventilation, *IPPV* volume-targeted pressure control ventilation, *PEEP* positive end-expiratory pressure, *CA* Cough Assist
*Significant difference from baseline

Sánchez-García et al. Intensive Care Medicine Experimental (2018) 6:8







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Lung donor treatment protocol in brain dead-donors: A multicenter study

Eduardo Miñambres, MD, PhD,[a] Jose Miguel Pérez-Villares, MD, PhD,[b] Mario Chico-Fernández, MD, PhD,[c] Arturo Zabalegui, MD, PhD,[d] José María Dueñas-Jurado, MD,[e] Maite Misis, MD, PhD,[f] Fernando Mosteiro, MD,[g] Gil Rodriguez-Caravaca, MD, PhD,[h] and Elisabeth Coll, MD[i]

Extended criteria donor lungs and clinical outcome: Results of an alternative allocation algorithm

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International Society for Heart and Lung Transplantation Donation After Circulatory Death Registry Report

Marcelo Cypel, MD, Bronwyn Levvey, RN, Dirk Van Raemdonck, MD, Michiel Erasmus, MD, John Dark, MB, FRCS, Robert Love, MD, David Mason, MD, Allan R. Glanville, MD, Daniel Chambers, MD, Leah B. Edwards, PhD, Josef Stehlik, MD, Marshall Hertz, MD, Brian A. Whitson, MD, Roger D. Yusen, MD, Varun Puri, MD, Peter Hopkins, MD, Greg Snell, MD, and Shaf Keshavjee, MD; for the International Society for Heart and Lung Transplantation

From the International Society for Heart and Lung Transplantation Donation after Circulatory Death Registry, Dallas, Texas.

An Exciting New Era in Donor Organ Preservation and Transplantation: Assess, Condition, and Repair!

James P. Hunter, MBChB, MD[1] and Rutger J. Ploeg, MD, PhD, FRCS[1]

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Organización Nacional de Trasplantes

PROTOCOLO DE MANEJO DEL DONANTE TORÁCICO:

ESTRATEGIAS PARA MEJORAR EL APROVECHAMIENTO DE ÓRGANOS.

La donación es una parte del acto integral del trasplante y requiere una valoración individualizada de cada caso. Por ello **todos los donantes deberían ser considerados como potenciales para donación pulmonar** siendo los criterios de selección los siguientes:

- Edad < 60 años. En situaciones puntuales podrían considerarse válidos donantes de hasta 65 años.
- Radiografía de tórax sin alteraciones de interés. Pequeñas contusiones, neumotórax, hemotórax, edema pulmonar neurogénico o atelectasia no descartan siempre la donación, si bien obligan a intensificar las medidas tendentes a corregirlas. La contusión o hemotórax unilateral no es contraindicación para la donación del pulmón contralateral.
- Gasometría arterial con PaO_2 > 300 mmHg (>200 mmHg en donantes potencialmente recuperables) con FiO_2 =1 y PEEP =5 cmH_2O durante 5 minutos.
- No antecedentes de broncoaspiración con repercusión clínica.
- No evidencia de secreciones purulentas repetidas tras la aspiración o evidenciadas en la broncoscopia
- Ausencia de contusiones y traumatismo grave o cirugía previa en el pulmón que se va a extraer.

Son contraindicaciones absolutas:

- Historia clínica de patología pulmonar crónica o aguda no recuperable
- Radiografía de tórax claramente patológica
- Historia de broncoaspiración o secreciones purulentas en la broncoscopia

Es importante recordar que **la recuperación del pulmón en un donante controlado correctamente suele ser beneficiosa para la preservación del resto de órganos**[4,5]

Donor ventilation parameters as predictors for length of mechanical ventilation after lung transplantation: Results of a prospective multicenter study

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From the [a]Division of Thoracic Surgery, Medical University of Vienna, Vienna, Austria; [b]Center for Medical Statistics, Informatics and Intelligent Systems, Medical University of Vienna, Vienna, Austria; [c]Department of Thoracic Surgery, Semmelweis University - National Institute of Oncology, Budapest, Hungary; [d]Pediatric Intensive Care Unit, Children's Hospital Bambino Gesù, Rome, Italy; [e]Interdepartmental Division of Critical Care Medicine, University Health Network, Toronto, Ontario, Canada; and the [f]Toronto Lung Transplant Program, Division of Thoracic Surgery, University Health Network, Toronto, Ontario, Canada.

Table 3 Linear Models

Variables	Estimate	Standard error	*p*-value
Model I - currently used criteria (multiple R-squared = 0.063, $p = 0.799$)			
Intercept	1.238	0.449	0.010
Donor age	0.001	0.004	0.820
Donor intubation time	−0.019	0.017	0.280
Smoking history	0.077	0.113	0.498
Offer P/F ratio	−0.001	0.001	0.556
Retrieval P/F ratio	0.001	0.001	0.224
Retrieval pCO_2	0.006	0.006	0.383
Aspiration history	0.143	0.182	0.435
Chest trauma	−0.008	0.199	0.969
Pathologic CXR	0.101	0.125	0.422
Model II—including measured ventilation parameters (Multiple R-squared = 0.046, $p = 0.012$)			
Intercept	1.851	0.117	<0.0001
Retrieval C_{dyn}	−0.006	0.002	**0.012**
Model III—including recipient factors (multiple R-squared = 0.293, $p < 0.0001$)			
Intercept	1.338	0.163	0.001
Retrieval C_{dyn}	−0.006	0.002	**<0.05**
iPAH	0.631	0.218	**<0.005**
sPH	1.194	0.304	**<0.001**
LAS	"0.010	0.003	**<0.001**

Abbreviations: C_{dyn}, dynamic compliance; CXR, chest X-ray; iPAH, idiopathic pulmonary arterial hypertension; LAS, lung allocation score; P/F, partial pressure of oxygen/fraction of inspired oxygen; pCO_2, partial pressure of carbon dioxide; sPH: secondary pulmonary hypertension.

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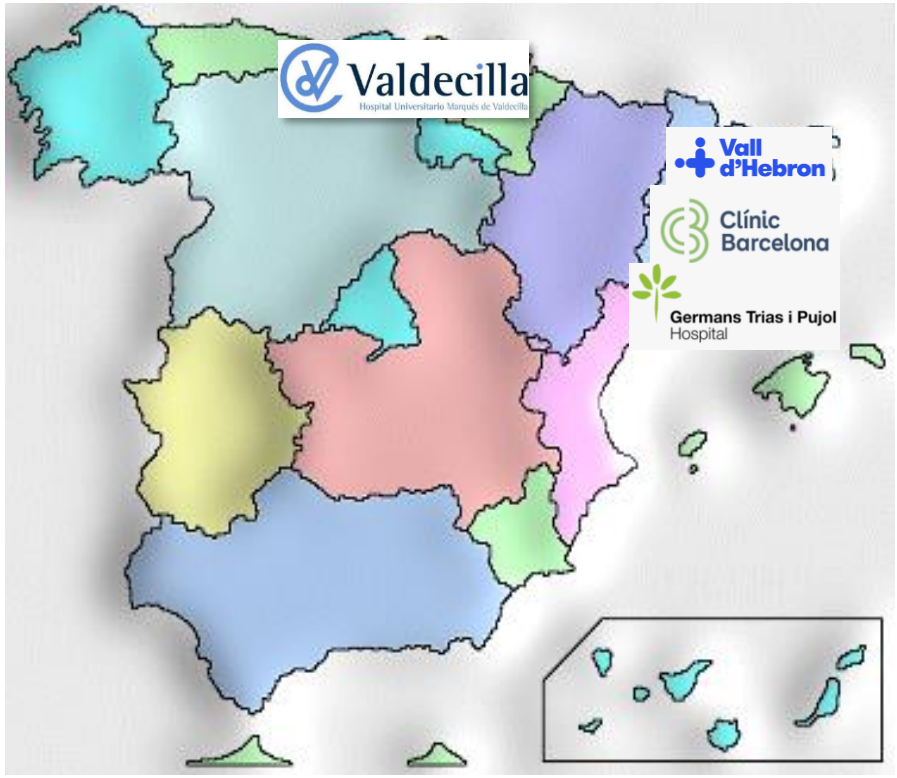

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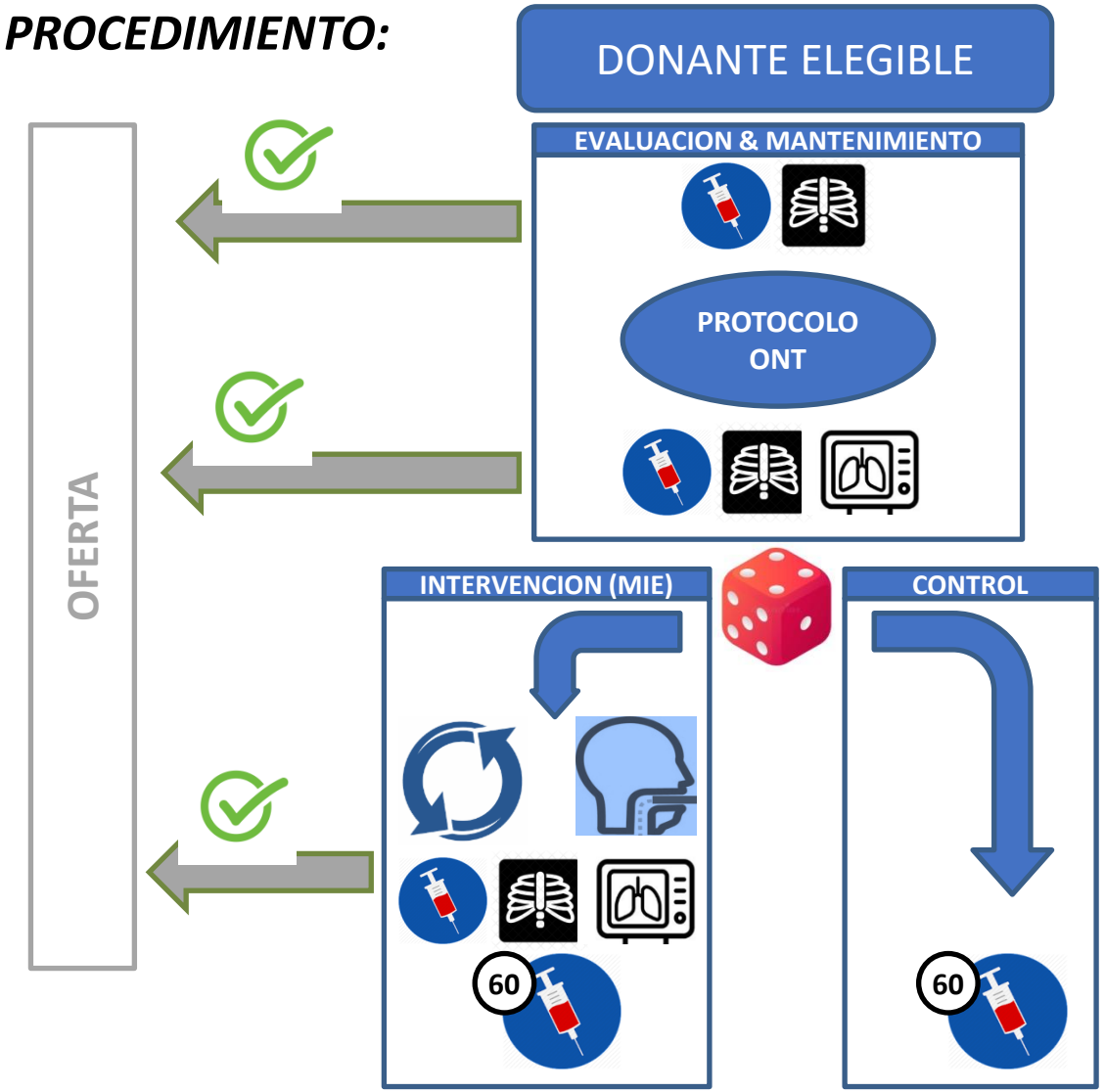

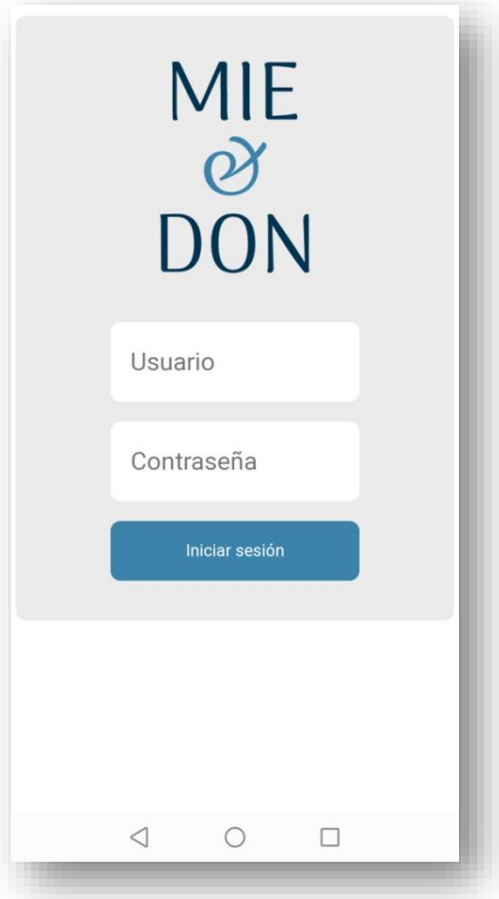

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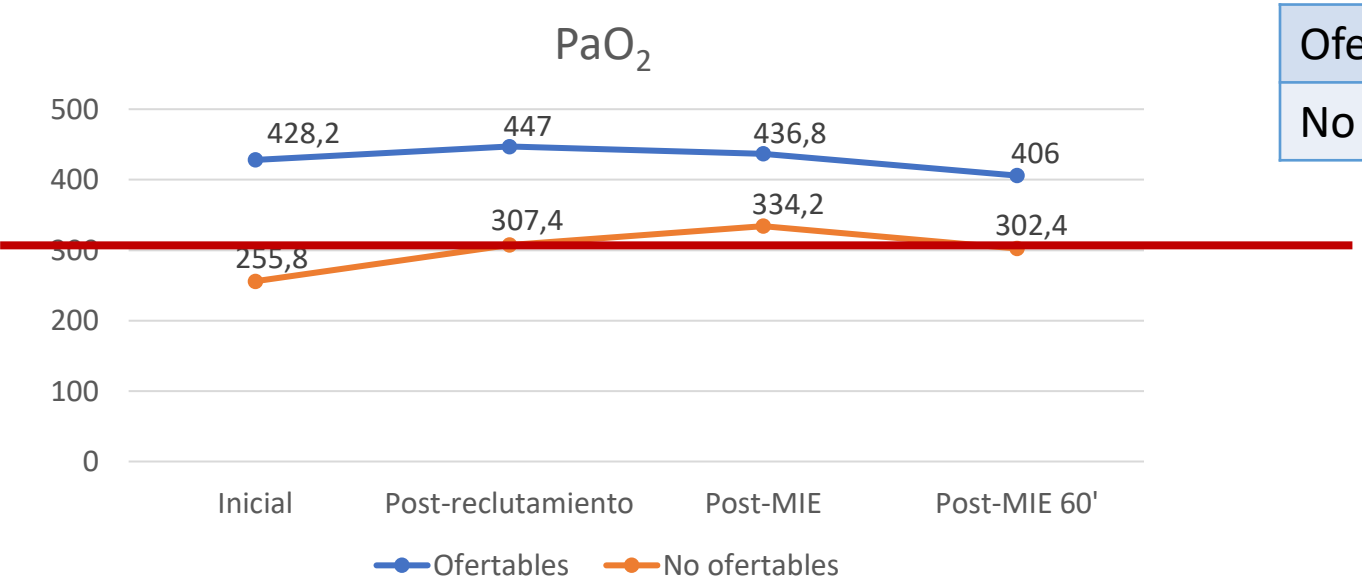
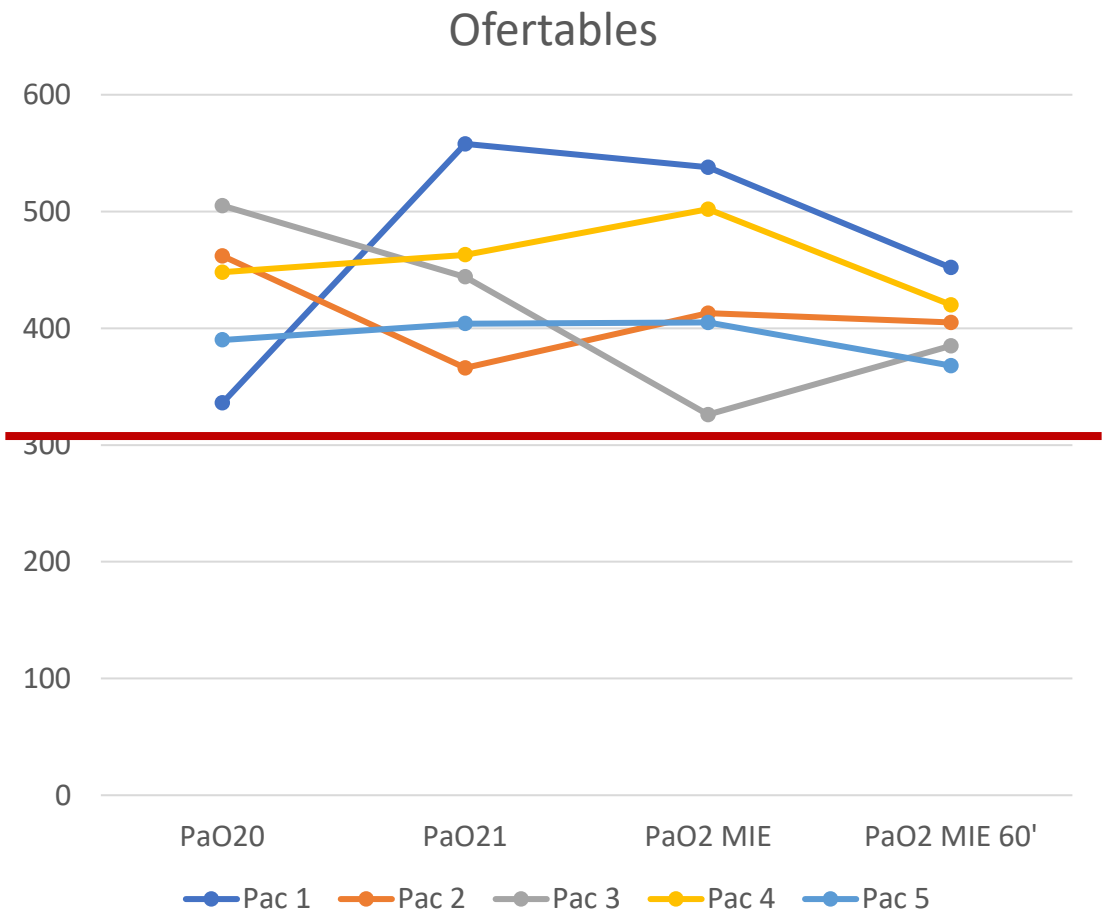
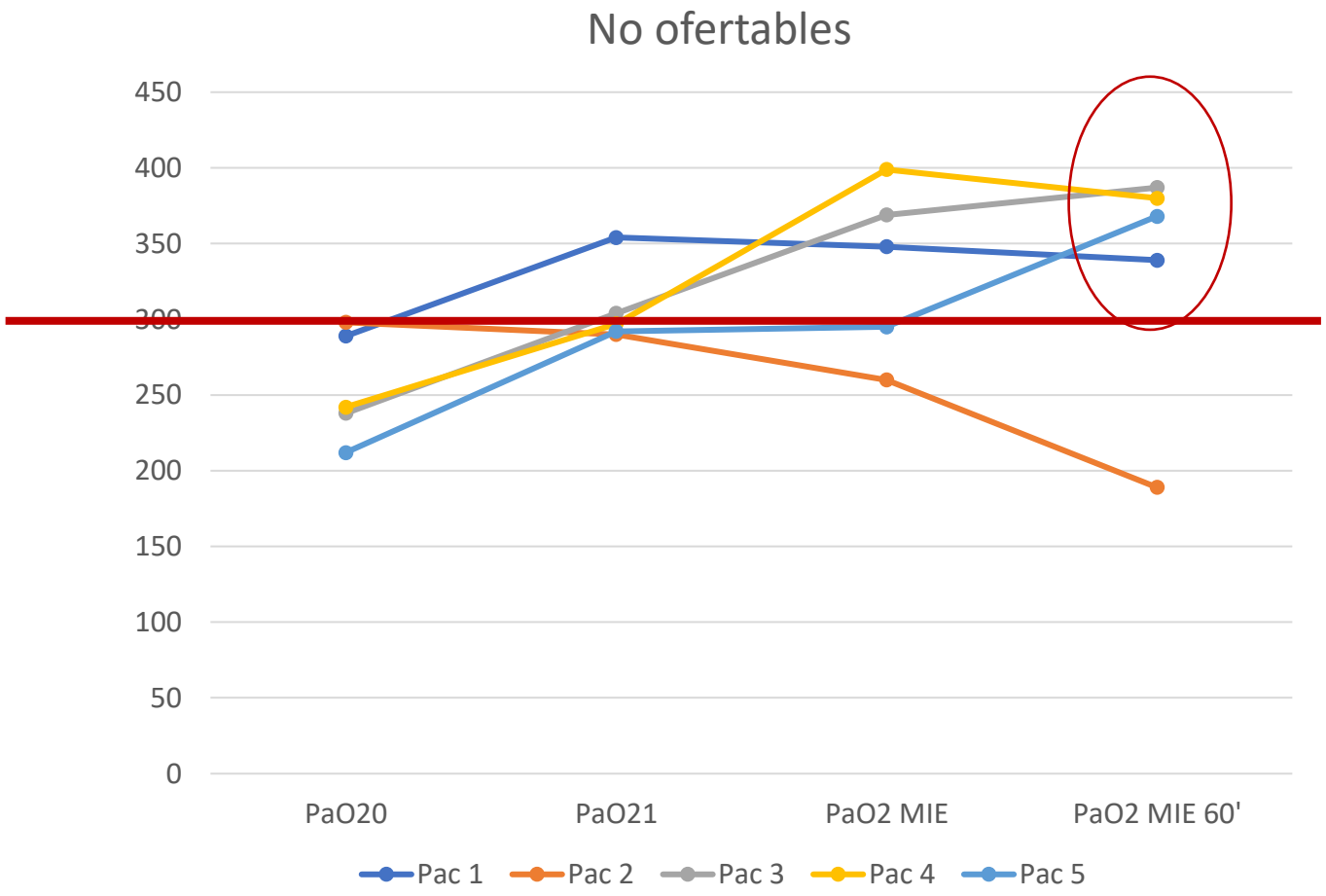


	Δ1(%)	Δ2(%)	Δ3(%)
Ofertables	18,8 (8%)	-10,2 (-0,4)	-30,8(-5,05)
No ofertables	51,5 (21,6)	26,8(25,48)	31,8 (11,24)

- No complicaciones asociadas
- No inestabilidad hemodinámica
- No alteración órganos ofertables


Ofertables
600
500
400
300
200
100
0
PaO20
PaO21
PaO2 MIE
PaO2 MIE 60'
Pac 1
Pac 2
Pac 3
Pac 4
Pac 5


No ofertables
450
400
350
300
250
200
150
100
50
0
PaO20
PaO21
PaO2 MIE
PaO2 MIE 60'
Pac 1
Pac 2
Pac 3
Pac 4
Pac 5

- El MI-E es una técnica segura que podría mejora la oxigenación en los donantes gasométricamente no ofertables para donación pulmonar.
- Este es el primer trabajo que valora la fisioterapia respiratoria y el MI-E como herramienta para la mejora y mantenimiento del donante pulmonar.
- Hacen falta estudios comparativos que lo corroboren.

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