2019 euroPCR

Primary Intra-aortic balloon support vs. Inotropes for Decompensated Heart Failure and Low Output

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Potential conflicts of interest

Speaker's name : Corstiaan den Uil

☑ I do not have any potential conflict of interest to declare

Why this study?

- **Decompensated heart failure without ACS** and a **low output** is a bad condition -> diuretic resistance ++; mortality +++
- Inotropes: Maybe only temporary improvement; increased mortality?
- Early implantation of an intra-aortic balloon pump (IABP) may better increase organ perfusion

What did we study?

INCLUSION

- Adults with decompensated HF, no ACS
- Systolic BP <100 mm Hg from low cardiac output (SvO_2 <55%)
- Neutral or positive fluid balance despite high-dose IV diuretics

EXCLUSION

- Moderate-severe AR
- Femoral artery occlusion
- ACS within 7 days before inclusion

PRIMARY ENDPOINT

- Δ SvO_2 (3h-0h)

SECUNDARY ENDPOINTS

- Δ Cardiac power output (48h-0h)
- Δ NT-proBNP (48h-0h)
- Cumulative fluid balance (48h)
- Δ Dyspnea severity score (48h-0h)
- MACE 90 days

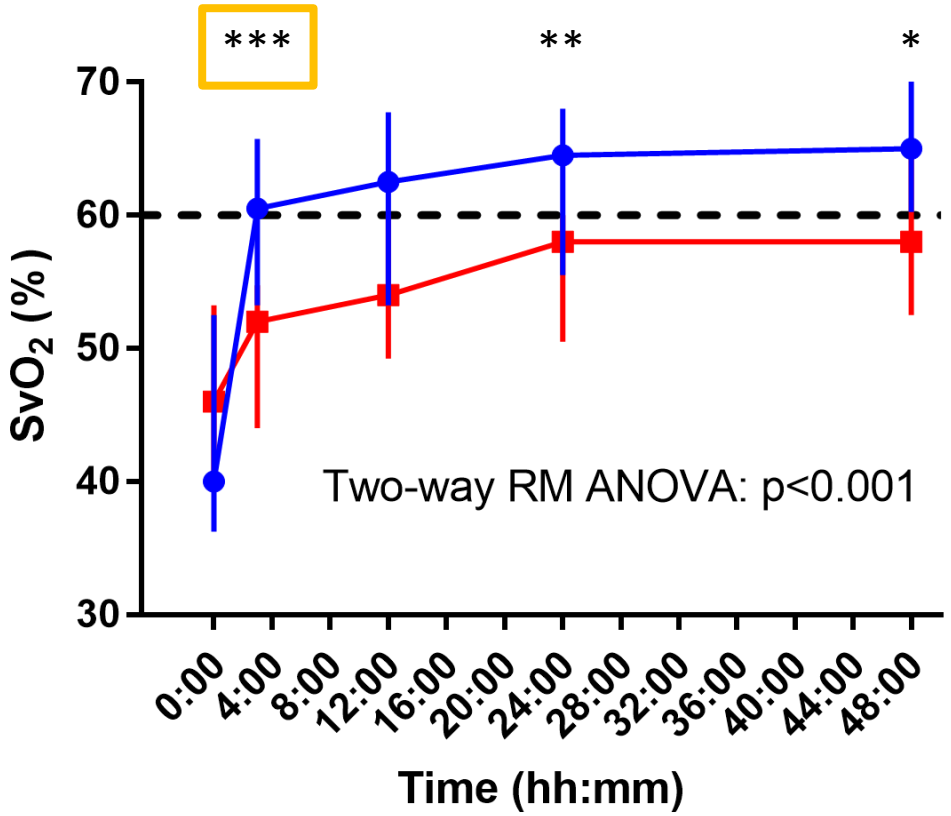
How was the study executed?

- Investigator-initiated single-center randomized controlled trial
- Each patient received a PAC
- 1:1 randomization to primary 50 mL IABP implantation or treatment with inotropes (preferably enoximone; dobutamine was also allowed)
- A sample of 2x13 patients – 80% power
- Data presented as median [IQR], or number (%)

What are the essential results? (1)

BASELINE CHARACTERISTICS	IABP (n=16)	Inotropes (n=16)	P-value
Age, years	53 [44-64]	61 [54-73]	0.12
Gender, male	12 (75%)	11 (69%)	0.99
Nonischemic, dilated	11 (69%)	10 (63%)	0.99
Acute on chronic	13 (81%)	11 (69%)	0.69
SvO_2, %	40 [36-53]	46 [41-53]	0.25
Cardiac power output, W	0,46 [0,34-0,58]	0,53 [0,38-0,67]	0.32
Lactate, mmol/L	1.8 [1.2-2.0]	2.0 [1.3-4.8]	0,36
NT-pro-BNP, ng/L	10.526 [6.500-19.281]	12.187 [8.509-29.773]	0.87

What are the essential results? (2)



Data represent median [IQR]
Reference line set at SvO_2=60% to indicate the therapeutic target

What are the essential results? (3)

SECONDARY ENDPOINTS	IABP (n=16)	Inotropes (n=16)	P-value
Δ Cardiac power output, 48h, W	+0.27 [+0.17; +0.45]	+0.09 [-0.04; +0.21]	0.004
Δ NTproBNP, 48h, % change	-59.3 [-78.5; -46.7]	-16.0 [-40.4; +3.3]	<0.001
Cumulative fluid balance, 48h, mL	-3.066 [-3.876; -2.205]	-1.198 [-2.251; -70]	0.006
Δ Dyspnea Severity Score, 48h	-4 [-6; -3]	-2 [-3; 0]	0.02
MACE* 90 days	6 (38%)	11 (69%)	0.16

* Cross-over or other escalation of therapy, death, heart failure rehospitalization, TIA/stroke

What are the essential results? (4)

CLINICAL OUTCOMES	IABP (n=16)	Inotropes (n=16)	P-value
No. Patients with SAEs	4 (25%)	8 (50%)	0.27
Bridge to LVAD or cardiac transplant	5 (31%)	0 (0%)	0.04
In-hospital mortality	3 (19%)	6 (38%)	0.43
30-day mortality	3 (23%)	7 (44%)	0.25
90-day mortality	4 (25%)	9 (56%)	0.15

Why is this important?

- Primary IABP showed substantial and fast hemodynamic benefit
- IABP remains a valuable tool in the ICU to support patients with low output not due to ACS
- To bridge them to recovery, or towards the next therapy
- An appropriately powered pivotal trial is required

The essentials to remember

This study highlights a ‘forgotten’ indication for IABP usage

Primary mechanical support was better than treatment with inotropes

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Primary intra-aortic balloon support versus inotropes for decompensated heart failure and low output: a randomised trial

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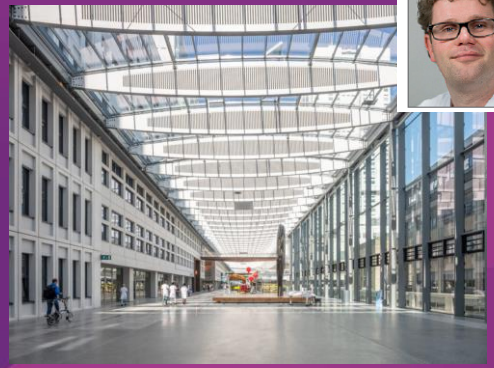

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