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Left Ventricular Function Recovery after LAD Hyperoxemic Blood Infusion in ST-Elevation Anterior AMI Treated with Primary PCI

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supersaturated OxYgen
in ST-Elevation Reperfused-AMI

Purpose of Study

- To investigate LV function recovery, cardiac enzyme kinetic and ST-segment evolutionary changes in *first anterior* AMI pts treated with Aqueous Oxygen (AO) coronary infusion after primary PCI
- To compare these results with those obtained in a case-matched control group of pts



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Methods I

- Hyperoxemic blood (pO₂ 760-1000 mmHg) selectively infused for 90' into the LAD via a 4F infusion catheter immediately after primary PCI in AO patient group
- Spontaneous normoxemic blood autoperfusion in control group
- LV function recovery evaluated by serial 2-D contrast echo (EF and WMSI, 16-segment model) after PCI, at 24 hrs, 7 days, 1, 3 and 6 mos in both groups



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Methods II

	AO group (n=21)	Control Group (n=20)	p
Male, n (%)	18 (86)	16 (80)	ns
Mean age (yrs)	62±10.7	65±9.6	ns
Time from symptom onset to admission (hrs)	3.5 ±1.6	2.8 ±1.8	ns



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Procedural Characteristics I

	AO group (n=21)	Control Group (n=20)	p
Primary PTCA	20 (95.3%)	19 (95%)	ns
Rescue PTCA	1 (4.7%)	1 (5%)	ns
Proximal LAD	21 (100%)	20 (100%)	ns
Stenting rate	21 (100%)	19 (95%)	ns
IIb/IIIa	15 (71.4%)	13 (65%)	ns
IABP	0	3 (15%)	ns
Baseline LVEF (%)	41±7.3	41±7.7	ns
Mean time to reperfusion (hrs) *	4.48±1.5	5.10 ±1.2	ns

* > 4 hours delay in 65%



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Procedural Characteristics II

	AO group (n=21)	Control Group (n=20)	p
➤ Baseline			
TIMI 0	52%	60%	ns
TIMI 1	28.5%	25%	ns
TIMI 2	19.5%	15%	ns
➤ Multiple stenting	38%	20%	ns
➤ N° stent/patient	1.5±0.7	1.2 ±0.4	ns
➤ Mean stent length (mm)	26.3±12	19.9 ±8.5	ns



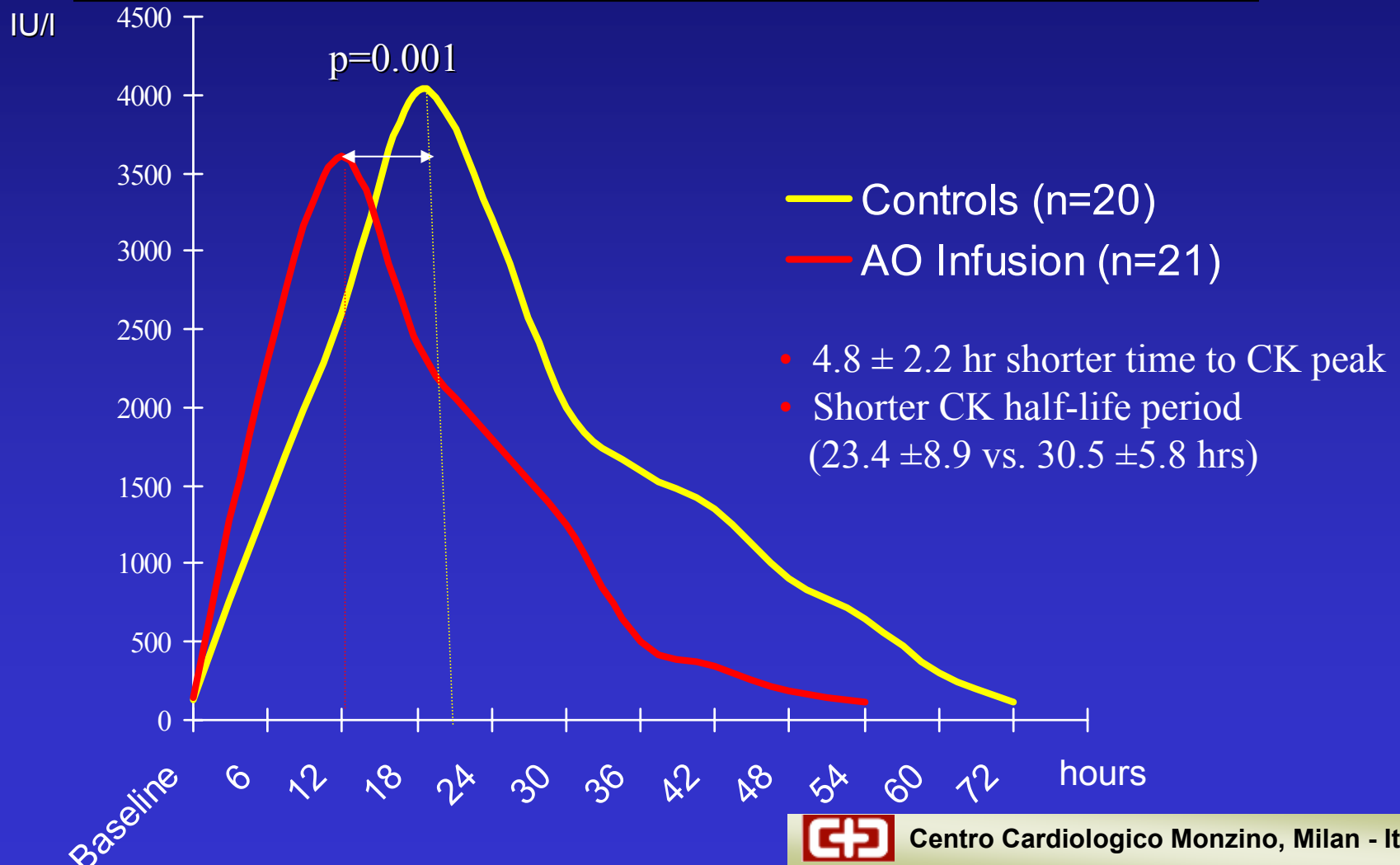
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Results

	AO group (n=21)	Control Group (n=20)	p
➤ CK peak (UI/l)	3609 ± 2214	4024±2649	ns
➤ MB peak (UI/l)	377± 219	327±165	ns
➤ Time to peak (hrs) (from symptoms onset)	9.4±3.4	14.2±5.3	0.001
➤ Time to peak (hrs) (from LAD recanalization)	4.43±2.4	4.58±2.9	0.001
➤ CK half-life period (hrs)	23.4±8.9	30.5±5.8	0.006



AO Treated Pts vs. Control Pts

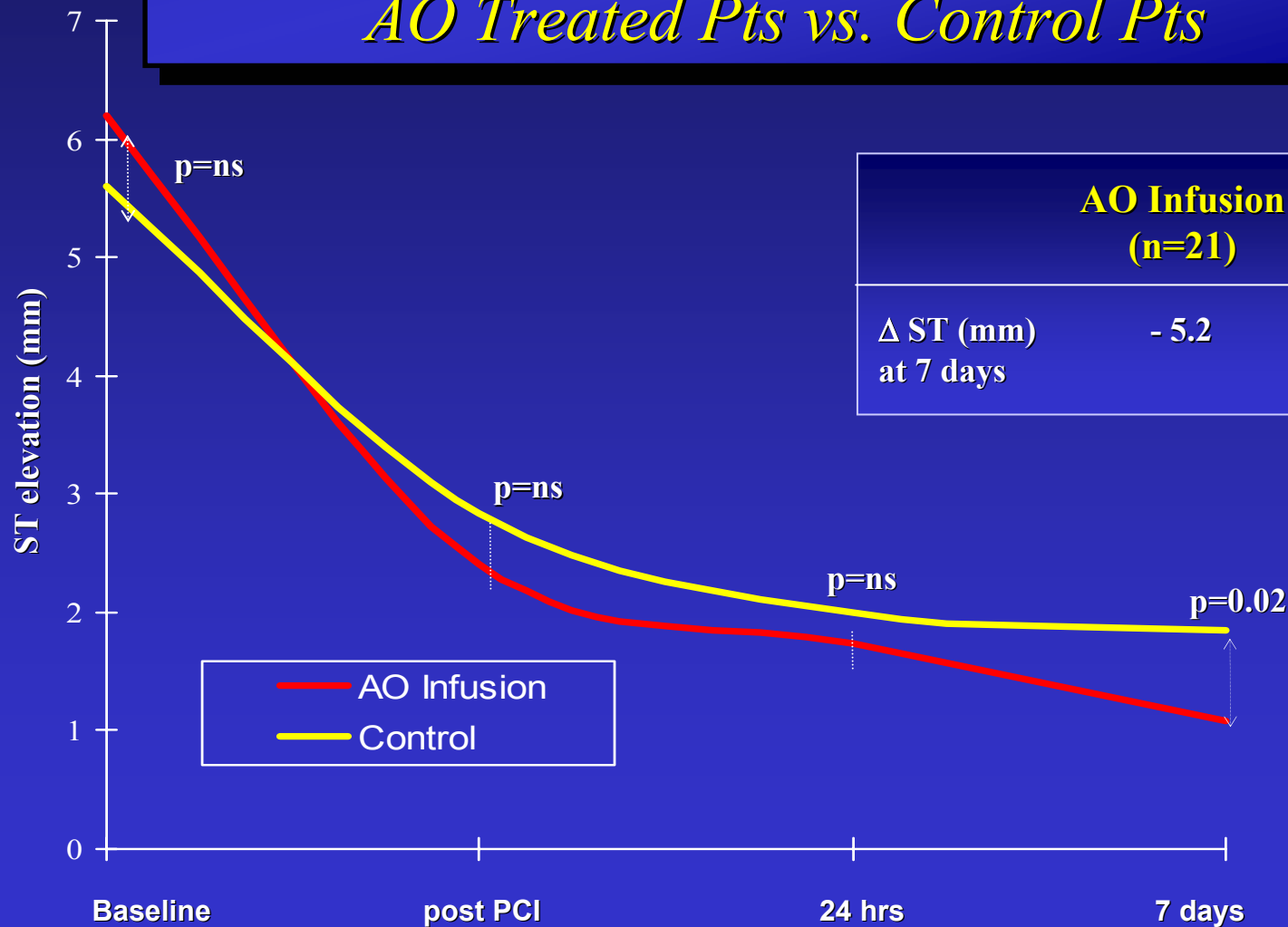




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ST-segment Changes

AO Treated Pts vs. Control Pts



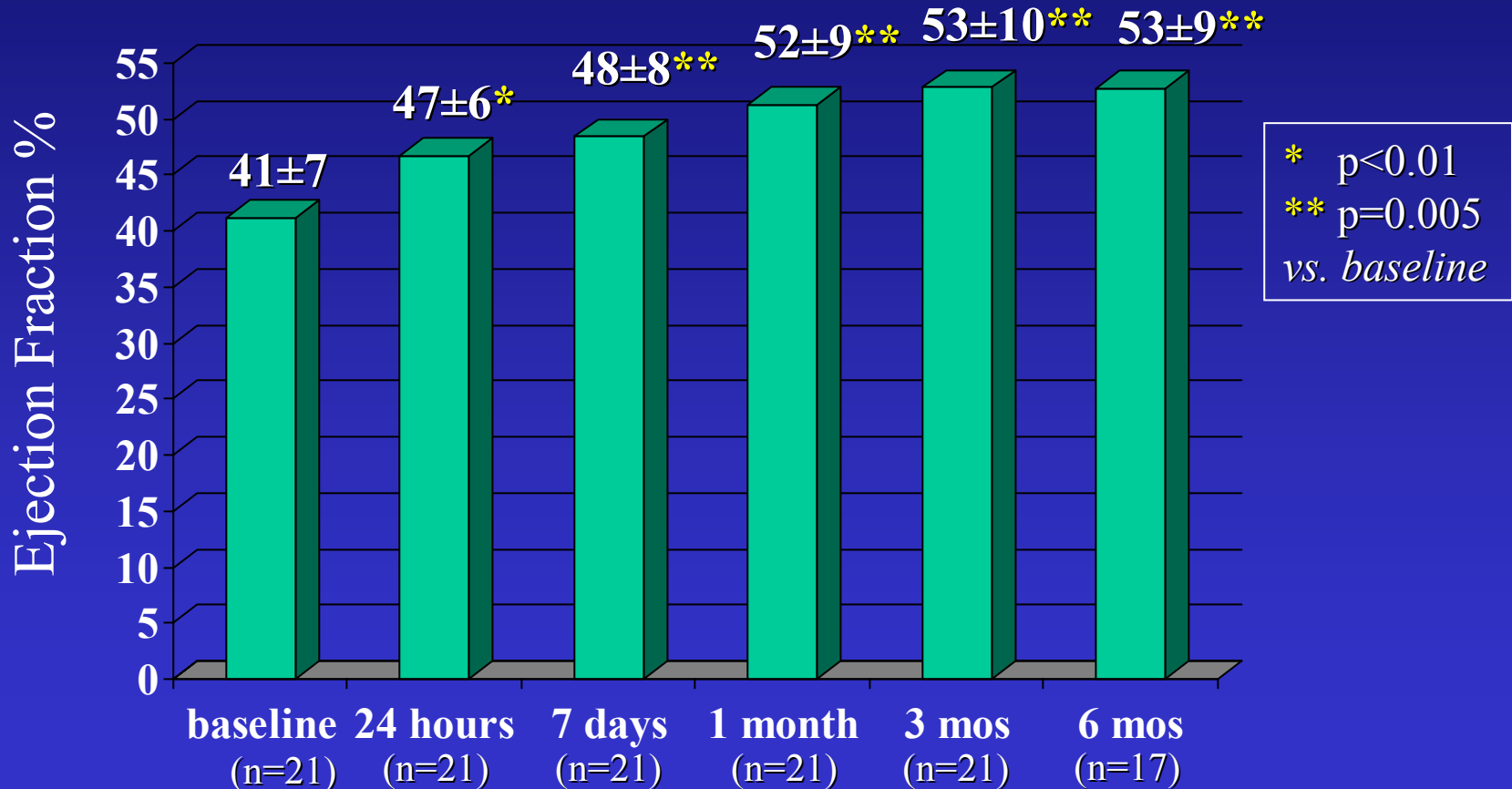
	AO Infusion (n=21)	Controls (n=20)	p
Δ ST (mm) at 7 days	- 5.2	- 3.8	0.02





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LVEF Improvement Over Time

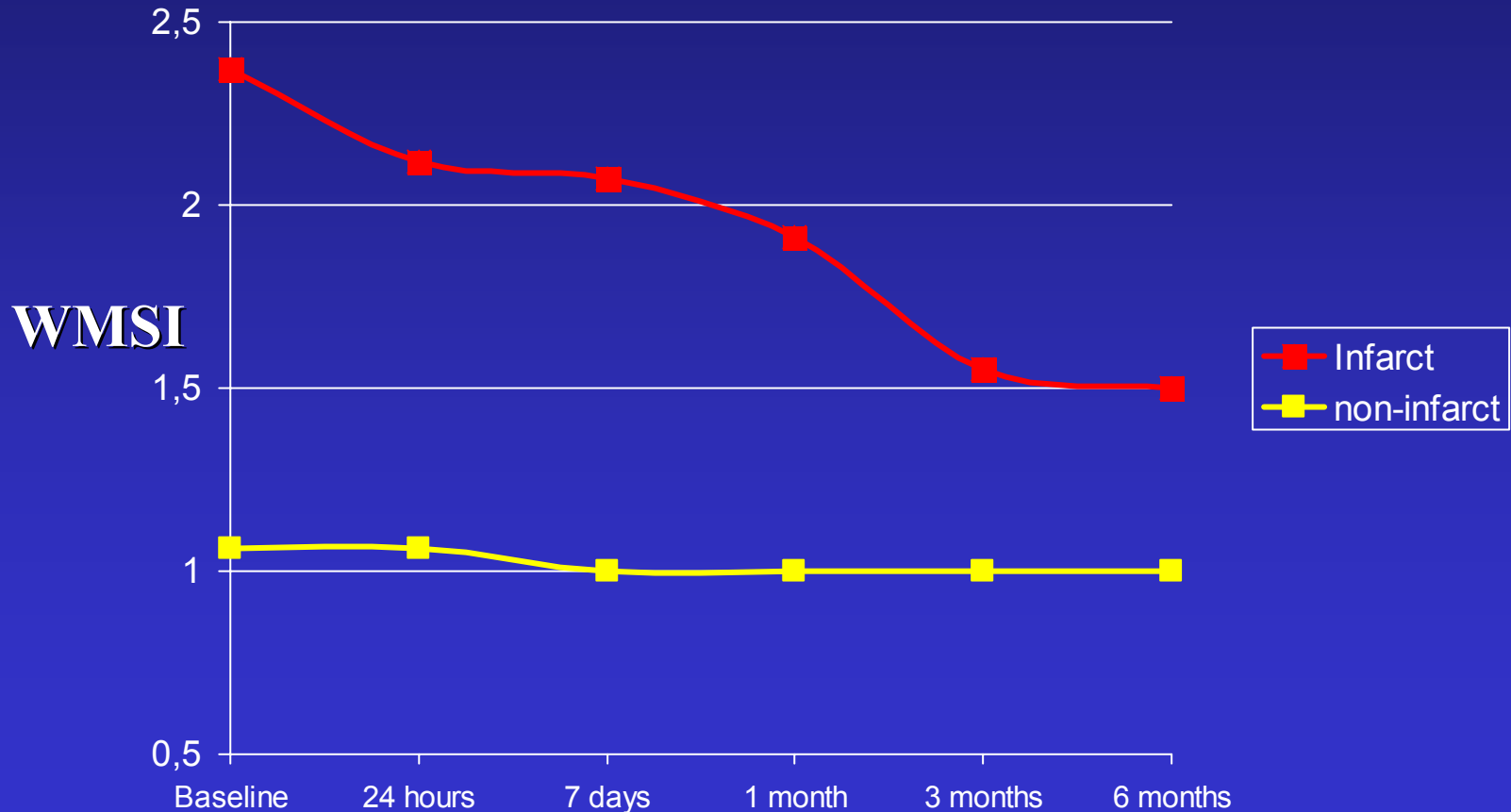




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TherOx AO Intracoronary Infusion

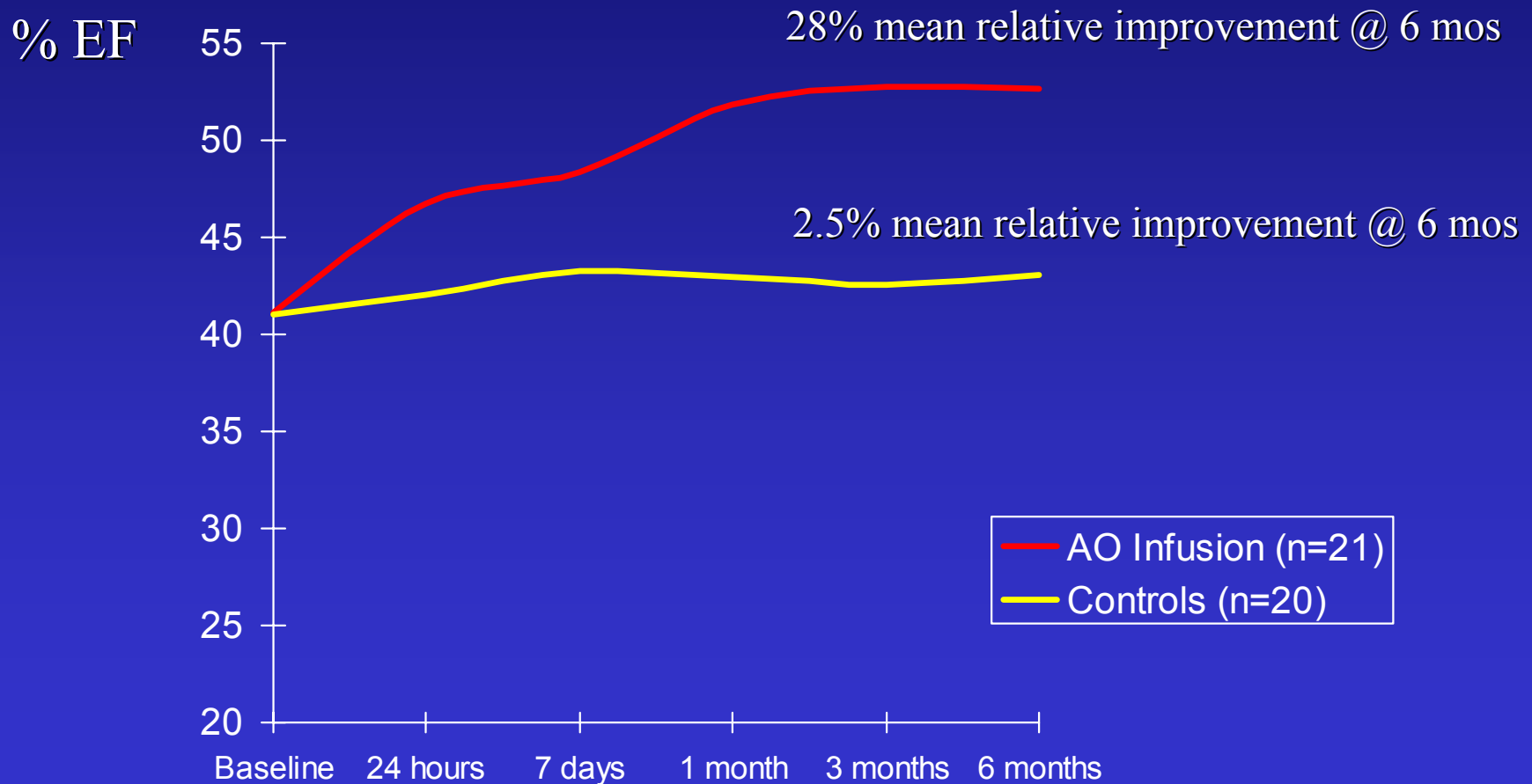
Regional WMSI : infarct vs non infarct zone





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LVEF: AO Treated Pts vs. Control Pts





Conclusions

- Hyperoxemic coronary perfusion with the TherOx AO System demonstrated to be a safe and well tolerated therapy in ST-elevation anterior AMI after primary PTCA
- Compared to a control population, it was associated with:
 - faster cardiac enzyme kinetic (more rapid “washout”) and ST-segment elevation reduction, suggesting a positive effect on microvascular reperfusion
 - a significantly better improvement in LV wall motion (26% vs. 2.4%) and ejection fraction (28% vs. 2.5%) at 6 months, regardless of time from symptom onset