

Can balneotherapy with ozone improve outcomes in patients with Acquired Brain Injury?

Promising findings from a quasi-randomized clinical trial

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AIM OF THE STUDY

This study wants to investigate the effect of balneotherapy with ozone in improving well-being in patients affected by severe acquired brain injury (SABI)

METHODS

Forty patients affected by SABI of either traumatic or vascular origin and attending the Neurorehabilitation Unit of the IRCCS Centro Neurolesi from June 2024 to April 2025 were enrolled in this quasi-randomized clinical trial. They were assigned to one of the two groups (experimental, EG and control, CG) in order of recruitment. The EG received 15 sessions of balneotherapy with ozone whereas the CG received the same amount of treatment using balneotherapy without ozone. All patients were assessed at baseline (T1) and after the bath session by evaluating the vital parameters and specific scales, including Norton, FIM, Braden, and Behavioral Pain Scale



RESULTS

	EXPERIMENTAL	CONTROL	p-value	Effect Size
	Median (I-III quartile)	Median (I-III quartile)		
Δ MOCA	4.5 (3.25,5.0)	2.0 (1.25,2.0)	<0.05	r = 0.64
Δ HRS-D	-3.5 (-5.0,-3.0)	0.0 (-1.0,1.0)	<0.05	r = 0.83
Δ HRS-A	-4.0 (-4.0,-2.25)	-1.0 (-2.0,0.0)	<0.05	r = 0.66
Δ FC	-6.35 (-8.60,-5.05)	-1.71 (-2.38, -1.19)	<0.05	r = 0.98
Δ IMI	54.0 (41.25,60.0)	10.0 (5.0,10.0)	<0.05	r = 0.84
Δ Rankin Scale	-1.0 (-2.0,-1.0)	0.0 (-0.75,0.0)	<0.05	r = 0.74

No significant differences were found between the two groups in demographic variables. Significant improvements were observed in the EG in almost all scales. About vital parameters we observed a relevant decrease of heart rate over time

CONCLUSIONS

In this study we found that patients receiving balneotherapy with ozone obtained better results than those with balneotherapy alone. It is possible that balneotherapy combined with ozone therapy may lead to improved systemic and local circulation, reduced inflammation, and enhanced tissue oxygenation, potentially aiding in pressure ulcer prevention, muscle tone maintenance, and general well-being, representing a valuable tool to improve some outcomes and well being in patients with SABI.

