

뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

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The effect of hydrotherapy on balance and paretic knee strength in stroke patients: meta-analysis

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Cheonan Medical Center, Improvements in balance and motor functions, particularly BBS, were achieved in stroke patients by hydrotherapy. Especially, hydrotherapy rehabilitation for chronic stroke patients exhibited significantly greater effects on improving postural stability than did the control group.¹, The Catholic University of Korea Bucheon St. Mary's Hospital, Department of Rehabilitation Medicine², The Catholic University of Korea Seoul St. Mary's Hospital, Department of Rehabilitation Medicine³

Introduction

To overcome the disability and promote neurological and functional improvements on patients with stroke, many diverse therapeutic interventions have been used. Among them, Water-based therapy, called hydrotherapy, is the rehabilitation therapy that uses the unique properties of water, such as natural buoyancy, hydrostatic pressure, thermodynamics, hydrodynamic forces, and viscosity. Recently, a meta-analysis regarding the effect of hydrotherapy was reported on postural balance of hemiplegic patients after stroke by Iatridou G. et al in 2017, but missed some studies and had the statistical limitation. Therefore, we performed a meta-analysis to reinforce the effect of hydrotherapy for patients with stroke on postural balance following subgroup analysis depending on the subacute or chronic stroke phase.

Methods

A comprehensive search was done via databases(PubMed, EMBASE and Web of science) until 12, April, 2019 to select randomized controlled trials(RCTs). The study was registered with PROSPERO (registration number CRD42019131894). Berg Balance Scale(BBS) was pooled as primary outcome, and Forward Reach Test(FRT), Time Up and Go test(TUG) as secondary outcomes. All statistical analyses were performed using RevMan 5.3. Subgroup analyses were performed to investigate the impact according to post-stroke onset duration; subacute phase (<6 months post-stroke) and a chronic phase (defined as > 6 months post-stroke).

Results

Eleven RCTs were included. Seven studies were related to the chronic stroke phase, and four articles for subacute stroke phase. Pooled results showed that hydrotherapy was more beneficial in patients with stroke on BBS(MD=1.60, 95%CI: 1.00 to 2.19, Fig1),

FRT(MD=1.78, 95%CI: 0.73 to 2.83, Fig2), and TUG(MD=-1.41, 95%CI: -2.44 to -0.42, Fig3) than CT. In subgroup analysis according to stroke-onset duration, hydrotherapy for patients with chronic phase, exhibited a significant effectiveness on BBS (MD=1.61 95%CI: 1.00 to 2.21, Fig1), whereas a favourable, not significant, effect was observed in subacute phase(MD=1.04, 95%CI: -2.62 to 4.70, Fig1).

Discussion

Hydrotherapy has been proven to have a significant effect on postural balance of patients with stroke, measured by BBS, FRT and TUG. Especially by focusing on sub-analysis conducted in the chronic phase after stroke, this meta-analysis demonstrated that hydrotherapy improves BBS. On the other hand, subgroup analysis for three studies with subacute stroke phase showed no significant improvement on BBS compared with land-based CT.

Conclusion

Improvements in balance and motor functions, particularly BBS, were achieved in stroke patients by hydrotherapy. Especially, hydrotherapy rehabilitation for chronic stroke patients exhibited significantly greater effects on improving postural stability than did the control group.

Acknowledgment .:

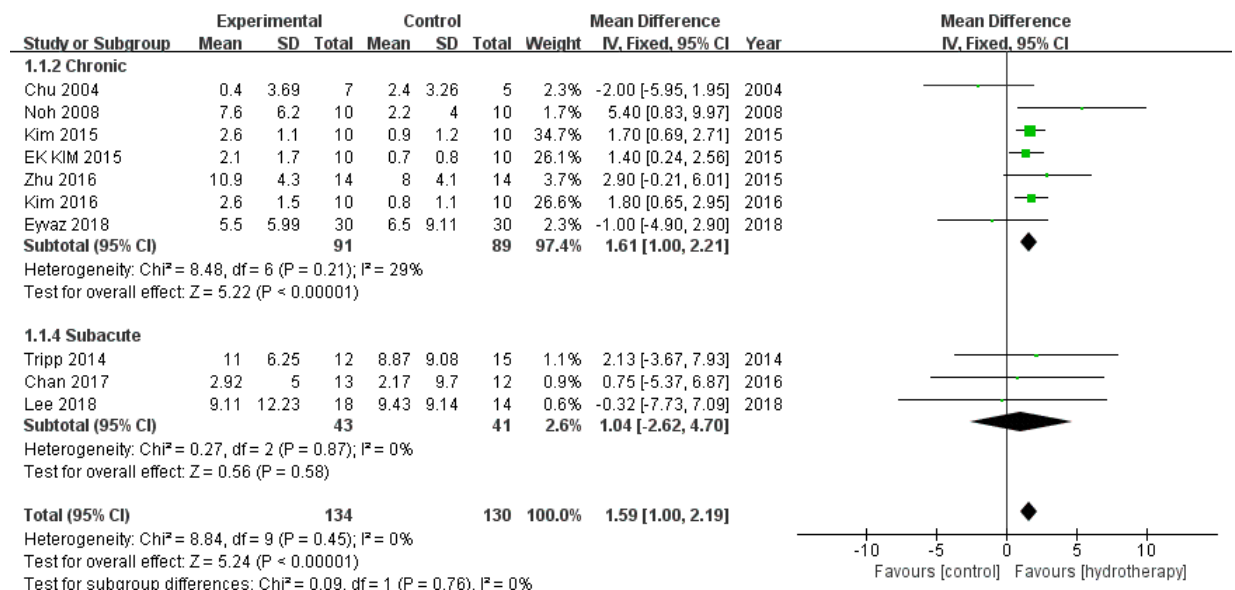


Figure 1. Overall and subgroup analysis of the effect of hydrotherapy on BBS

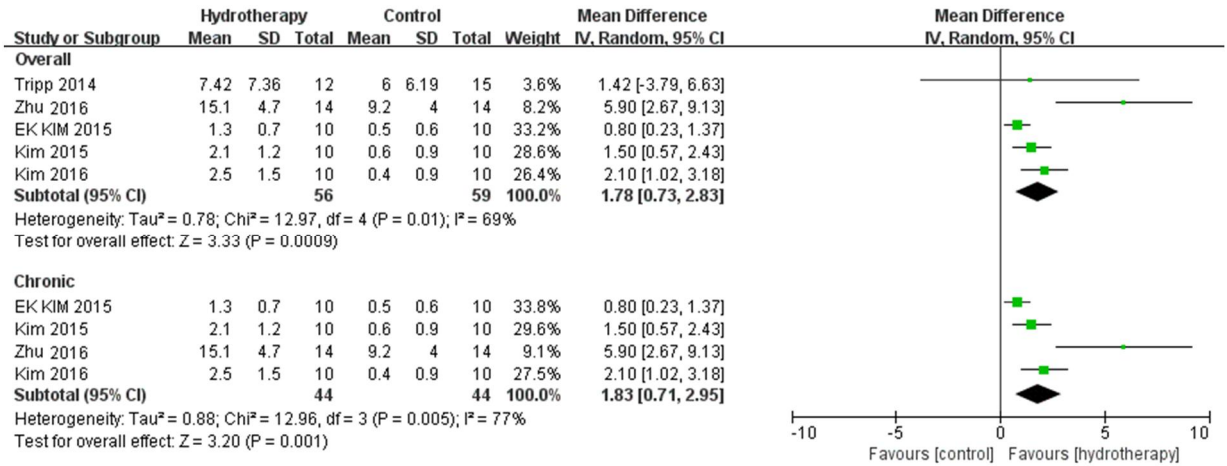


Figure 2. Overall and subgroup analysis of the effect of hydrotherapy on FRT

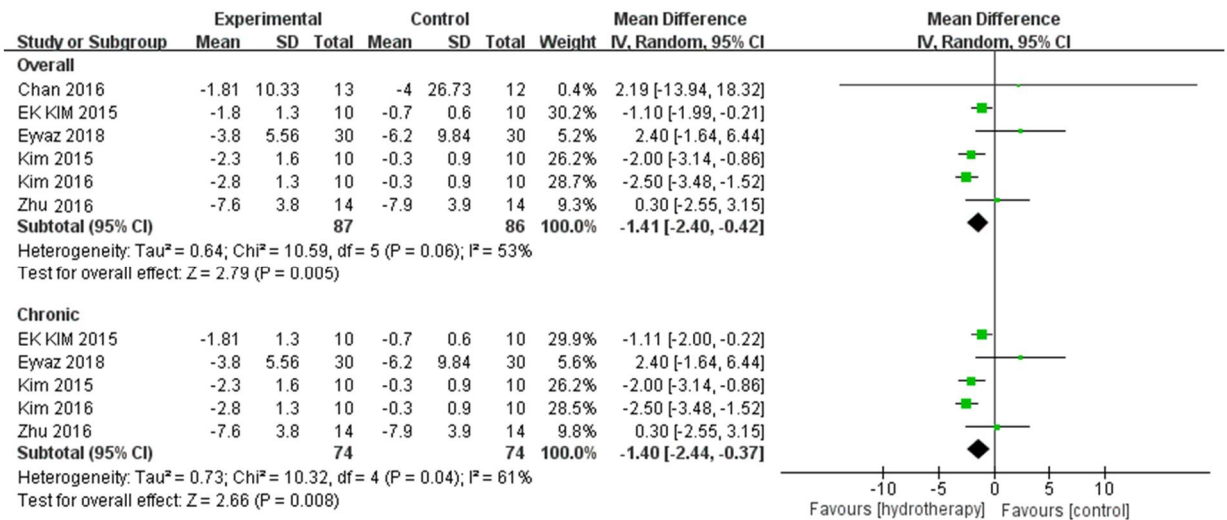


Figure 3. Overall and subgroup analysis of the effect of hydrotherapy on TU