

EFFECTS OF ACUPUNCTURE UPON CEREBRAL PERFUSION IN CEREBRAL SMALL VESSEL DISEASE: A PILOT STUDY

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Background and Objective:

Acupuncture improves cerebral blood flow (CBF) but has not been evaluated in patients with cerebral small vessel disease (CSVD). We investigated the effects of acupuncture on cerebral perfusion in CSVD measured by transcranial Doppler ultrasound (TCD).

Methods:

10 subjects with CSVD and 10 matched healthy control (HC) subjects were recruited. A single session of acupuncture was applied for 30 minutes in both groups. We measured pulsatility index (PI) of middle cerebral artery (MCA) by TCD to assess the vascular resistance in cerebral small vessel, and peak systolic velocity (PSV) of MCA to assess regional CBF. PI and PSV were measured at baseline, every 10 minutes during needles retention, and after needles removal.

Results:

PI was increased by 13% in CSVD group at 30 minutes without statistical significance ($p>0.05$) [Figure 1], but decreased 22% in HC group at 20 minutes with statistical significance ($p<0.05$) [Figure 2]. PSV was increased to a maximum of 39% at 20 minutes in CSVD group with statistical significance ($p<0.05$) [Figure 3], while PSV was remained in a steady trend and increased to a maximum of 4% at 30 minutes without statistical significance ($p>0.05$) [Figure 4] in HC group.

Conclusion:

From this pilot study, acupuncture may not be able to improve cerebral small vessel circulation in subjects with established moderate to severe CSVD. However, in subjects with no CSVD, it may improve cerebral small vessel circulation and have the potential of preventing development of CSVD. A larger study is needed to confirm our findings.

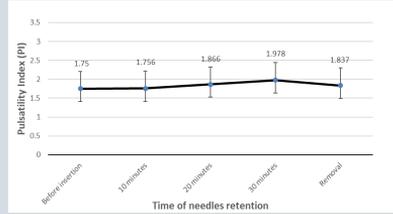


Figure 1. PI values (means \pm S.D) among CSVD group during 30 minutes acupuncture intervention. A steady rise of PI and reach a maximum increase of 13% at 30 minutes of needle retention and there is no statistically significant. ($P=0.651$)

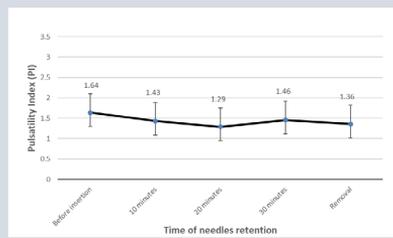


Figure 2. PI values (means \pm S.D) among HC group during 30 minutes acupuncture intervention. A decreasing trend in PI during needle retention up to removal ($P=0.03$, <0.05) and reach a maximum decrease of 22% at 20 minutes of needles retention. ($P=0.002$, <0.024 (Adjusted significance))

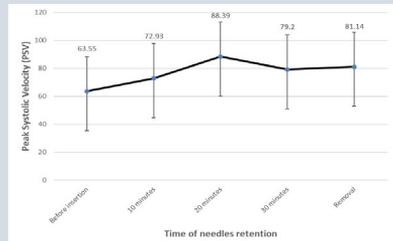


Figure 3. PSV values (means \pm S.D) among CSVD group during 30 minutes acupuncture intervention. A steady rise of PSV during needle retention up to removal ($p=0.00044$, <0.05) and reach a maximum increase of 39% at 20 minutes of needle retention ($p=0.0004$, <0.0005 (Adjusted significance))

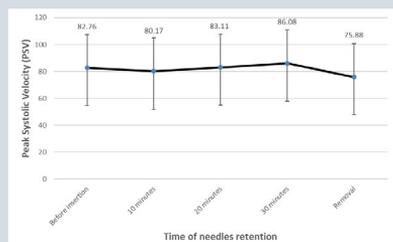


Figure 4. PSV values (means \pm S.D) among HC group during 30 minutes acupuncture intervention. A steady trend of PSV and there is no statistically significant ($P=0.379$). A maximum increase of 4% at 30 minutes of needle retention and a maximum decrease of 8% at needle removal.