Cerebral vasoreactivity and intima-media thickness in Down Syndrome: a case-control study

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INTRODUCTION

Subjects with Down Syndrome (DS) have high prevalence of cerebral vascular amyloidosis, cognitive decline and dementia. In Alzheimer Disease, impaired vasoreactivity has been reported as the results of vascular amyloid deposition. Aim of our study was to verify presence of impaired cerebral vasoreactivity and to study carotid intima media-thickness (IMT) by carotid and transcranial ultrasound.

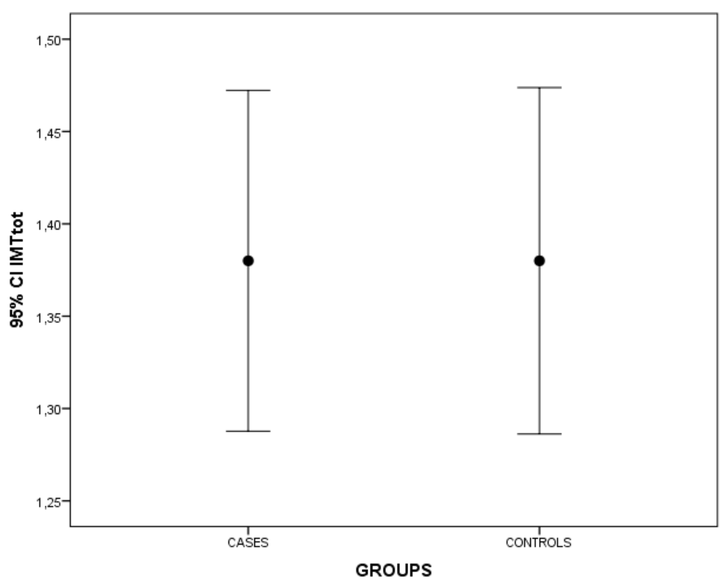
METHODS

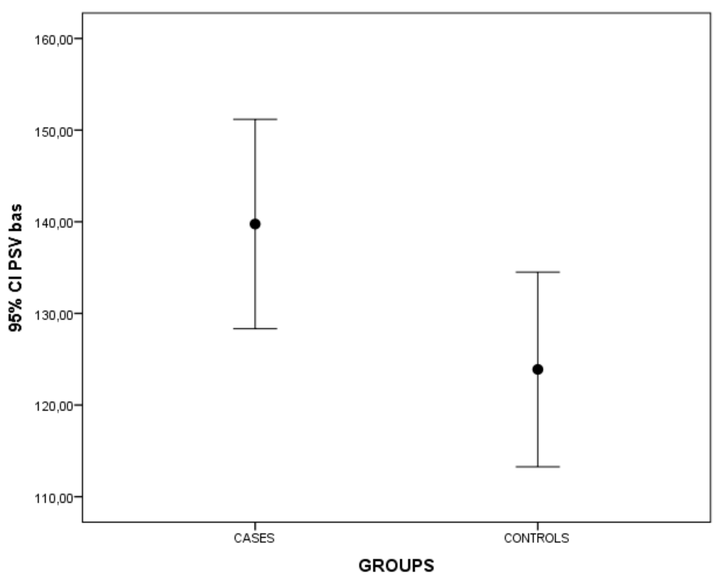
We sudied 25 DS and compared them with 25 age matched normal controls. Vasomotor reactivity was evaluated by means of breath-holding index (BHI) test.

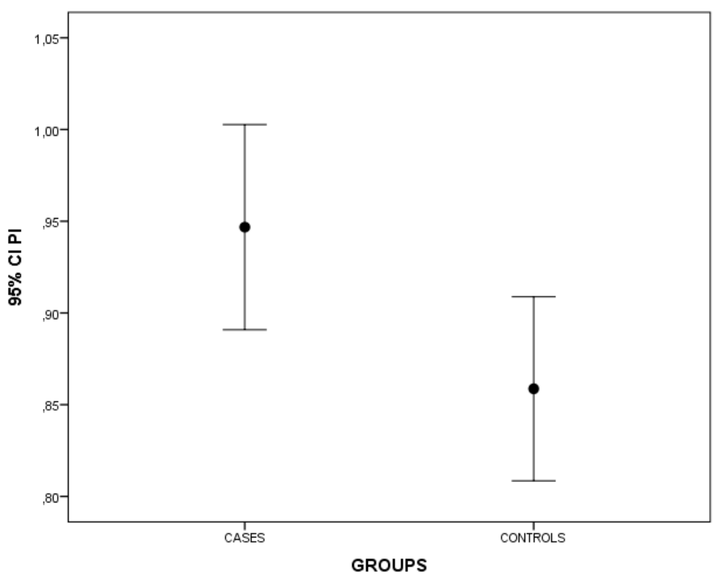
There was no difference in IMT, both considering the two side separately (left: 0.70 ± 0.10 vs 0.69 ± 0.12, p =.6) (right: 0.67 ± 0.13 vs 0.68± 0.10 , p=.5), and considering the sum of both sides (1.38±0.22 vs 1.38±0.23, p=1).

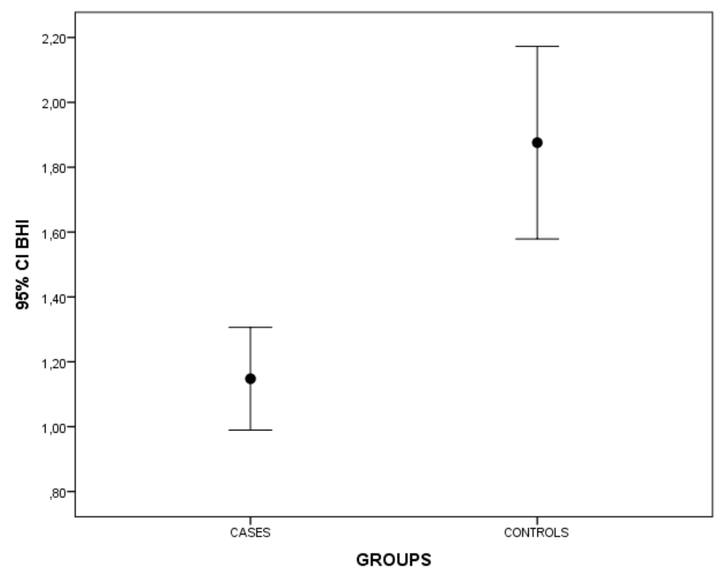
There was a significant difference in peak systolic velocities (PSV) (139.75 ±27.67 vs. 123.89 ±25.73, p=.04) and in pulsatility index (PI) (0.95± 0.14 vs. 0.86± 0.12, p=.02).

BHI was significantly lower in DS than in controls (1.15±0.38 vs 1.88 ± 0.72, p<.001).









	Cases (n.25)	Controls(n.25)	P
Mean Age ± SD	39.4 ± 6.3	40.88 ± 6.0	.41
Sex	12 M; 13F	8M; 17F	.39
Mean IMT ± SD	1.38 ± 0.22	1.38 ± 0.23	1
Mean MFV at rest ± SD	85.60 ± 15.75	78.95 ± 16.79	.16
Mean PSV at rest ± SD	139.75 ± 27.67	123.89 ± 25.73	.04
Mean PI ± SD	0.95 ± 0.14	0.86 ± 0.12	.02
Mean EDV post apnea ± SD	66.76 ± 12.33	74.56 ± 16.27	.06
Mean BHI ± SD	1.15 ± 0.38	1.88±0.72	<.001
Hypertension (%)		1(4%)	n.s.
Diabetes (%)	1(4%)	1(4%)	n.s.
Hypercolesterolemia (%)	7(28%)	6(24%)	n.s.

Main characteristics of cases and controls

CONCLUSION

Subjects with DS have increased PSV and PI, and show a reduction of BHI, expression of impaired vasomotor reserve, possibly due to micro-vascular impairment. Larger study with longitudinal design are needed to verify our data.

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