# Effect of head-upright tilt on the dynamic of cerebral autoregulation.



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| Titre | Effect of head-upright tilt on the dynamic of cerebral autoregulation. |
| Type de publication | Article de revue |
| Auteur | Lefthériotis, Georges [1], Preckel, Marie-Pierre [2], Fizanne, Lionel [3], Victor, J [4], Dupuis, Jean-Marc [5], Saumet, Jean-Louis [6] |
| Type | Article scientifique dans une revue à comité de lecture |
| Année | 1998 |
| Langue | Anglais |
| Date | 1998 Jan |
| Pagination | 41-7 |
| Volume | 18 |
| Titre de la revue | Clinical Physiology |
| ISSN | 0144-5979 |
| Mots-clés | Adult [7], Blood Pressure [8], Carbon dioxide [9], Cerebrovascular Circulation [10], Female [11], Heart Rate [12], Humans [13], Leg [14], Male [15], Posture [16], Regional Blood Flow [17], Ultrasonography, Doppler, Transcranial [18], Vascular Resistance [19] |
| Résumé en anglais | The effect of head-upright tilting on the rate of cerebral autoregulation was studied in 12 healthy volunteers (nine men and three women; age range 20-36 years). The dynamics of cerebral autoregulation was determined from the rate of change in cerebral resistance (RoR) during a drop in arterial blood pressure induced by rapid deflation of a 3-min ischaemic thigh cuff and from the ratio of changes in cerebral blood flow and arterial blood pressure (CAI) during the recovery period after the drop in arterial blood pressure. The test was performed supine and with 40 degrees head-up tilt (40 degrees HUT). Middle cerebral artery mean blood flow velocity was measured by transcranial Doppler simultaneously with peripheral arterial blood pressure using Finapres. The thigh cuff deflation induced a larger drop in arterial pressure during 40 degrees HUT [median -28% (25 percentile -36, 75 percentile -19)] than in the supine position [-16% (-23, -15)] ($P < 0.01$) and in cerebral resistance [supine: -12% (-15, -6); 40 degrees HUT: -15% (-20, -12); $P < 0.05$]. There was no significant change in RoR [15% s-1 (12, 15)] and CAI [1.9 (1.5, 3.1)] measured supine and during 40 degrees HUT [RoR: 13% s-1 (12, 15); CAI: 1.3 (0.99, 1.9)]. During the drop in arterial pressure, the relationship between arterial blood pressure and systolic peak-to-peak interval exhibited an hysteresis loop, indicating a cardiopulmonary and/or baroreflex activation that was not observed with cerebral resistance. The rate of autoregulation is an intrinsic property of the cerebral vascular bed and is not affected by the vasodilator state in the range of arterial blood pressure changes induced by the tight cuff method. |
| URL de la notice | http://okina.univ-angers.fr/publications/ua4173 [20] |
| Autre titre | Clin Physiol |

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|---|---|
| Identifiant (ID) PubMed | 9545619 [21] |

**Liens**
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