REELIN EXPRESSION AND PROCESSING ARE MODULATED BY B-AMYLOID

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Introduction: Reelin is a glycoprotein that modulates synaptic function and plasticity in the mature brain, contributing to memory formation. Therefore, changes of Reelin expression should affect neuronal function. We have previously reported altered cerebral Reelin expression in Alzheimer’s disease (AD), an amyloid disease that leads to cognitive impairment. Here we study Reelin expression changes in different amyloid conditions:

(i) AD,

(ii) Down’s syndrome (DS), where the extra copy of chromosome 21 enhances β-amyloid expression,

(iii) AD model transgenic mouse and

(iv) in SH-SY5H neuroblastoma cells treated with β-amyloid.

Aims: Our interest is to investigate if Reelin expression results modulated by b-amyloid.

Methods: Reelin expression from frontal cortex from human and Tg2576 transgenic mouse and Reelin from SH-SY5H cells was detected by Western blotting and immunocytochemistry. Changes in Reelin glycosilation were studied by lectin binding analysis and lectin gel-shift assay. Alterations of RNA transcription were investigated by rtPCR.

Results: We observe an increase in Reelin protein and Reelin mRNA levels in adults with DS, similar to that observed in AD. In foetal cortical DS samples we detected increased levels of Reelin but not of mRNA. Overexpression of mutant human APP (Tg2576) also led to an increase in levels of Reelin. When SH-SY5Y cells were treated with Aβ42 the levels of Reelin protein were augmented. Finally, an altered pattern of Reelin glycosylation was detected in AD patient cortex and in Aβ42-treated SH-SY5Y cells.

Conclusions: These results provide evidence that Reelin expression and processing are altered by b-amyloid.