Compromised hippocampal neurogenesis: an examination using a picture recognition task of the range of clinical conditions in which compounds which target this process could prove effective

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BACKGROUND

Neurogenesis in the adult human hippocampus has been shown to be impaired in a range of clinical conditions in which compounds which target neurogenesis could prove effective (Kempermann and Gage, 2009). This presentation including the statistical analyses were supported by Bracket.

METHOD

This CDR System picture recognition task: A signal patient separation tool

Object pattern separation tasks:

- The CDR System task:
  - Takes a few minutes to administer (<4 mins)
  - Has already been extensively validated for such use
  - Can serve as a proof of principle that a novel therapy is acting at the dentate gyrus & influencing neuronal activity
  - Can serve as a therapeutic marker of response, ie can act as an early indicator of efficacy
- The CDR System picture recognition task were compared to that from 1578 healthy volunteers (Kempermann and Gage, 2009), recruited at CRI-Oncology Group.

EVIDENCE CONSISTENT WITH COMPROMISED NEUROGENESIS

- Patients aged over 60 years with LLE compared with age matched controls
- LLE involved in smaller CDR System datasets
- Ability to identify original pictures not significantly impaired (p=0.66)
- LLE patients were better at rejecting similar pictures (p=0.025)
- Effect size 0.7
- Signal also observed in LLD for similar pictures but not significantly

EVIDENCE OF COMPROMISED NEUROGENESIS WITH NORMAL AGEING

- Aged 10-15 years
- LLD involved in similar CDR System datasets
- Ability to reject closely similar pictures from the originals is the subject at the rate of 20 pictures are seen for once 15 picture earlier
- For each picture the subject is required to press YES as quickly as possible if it was the original picture, or NO if it is a similar but different picture

CONCLUSIONS

- Hayes 2010: Quality of life in healthcare
- Innovation: Alzheimer’s disease is sufficient to improve patient separation