

A MODERN PERSPECTIVE ON SOME OF THE MOST HIGHLY CITED JNNP PAPERS OF ALL TIME

Mood disorder as a specific complication of stroke

Alan J Carson



Dr Alan J Carson, University of Edinburgh, discusses the realisation that depression after stroke was not simply a reaction to disability

Appraising the impact of Folstein *et al*'s¹ 1977 report on 'Mood disorder as a specific complication of stroke' is a challenging task for someone who did not enter medical school until the mid-1980s. Stroke changed in the 1970s, and the view in retrospect appears unrecognisable. This was a dramatic change, from an intellectual backwater too dull for neurologists to even bother seeing, to become a hot topic: a disease to be studied in mega trials and a standard bearer for evidence based medicine. Prior to the 1970s, with the exception of dysphasia, neuropsychiatric complications had been given scant thought—it was a disorder that affected how people walked. It was recognised that some elderly patients became depressed after stroke but the prevailing view appeared to be "so what, they're old and infirm, what do you expect?" It is against this backdrop that the work of researchers at John Hopkins has to be judged.

The importance of the paper was perhaps not the findings but the very fact that they published the study at all. Two years earlier their John Hopkins colleague

MOOD DISORDER AS A SPECIFIC COMPLICATION OF STROKE¹

Authors: Folstein MF, Maiberger R, McHugh PR

Year published: 1977

Robert Robinson published a fascinating study demonstrating that experimentally induced strokes in rats led to alteration in cerebral metabolism of catecholamines that correlated with behavioural changes in the rats that mimicked depression.² Folstein's data appeared to be an early example of translational research and were widely disseminated as they appeared to link laboratory based neurobiology with clinical practice. Tantalisingly it seemed to offer a human model for studying the anatomy of depression. Appearing, as it did, contemporaneously with the development of cerebral imaging techniques, this was the impetus researchers had needed. Over the next 2 decades, 143 reports were made on this topic. Sadly, the theory of anatomical location of brain lesions as a simplistic explanation for mood disorder did not stand up to scrutiny.³ It was perhaps too good to be true; a salient reminder of the need for confirmation in humans of findings from animal models.

In critical analysis the paper itself has suffered with the passage of time. Epidemiological techniques have advanced, as has expectation of sample sizes and analysis strategies. Future investigators submitting to the journal are unlikely to get a case control study past peer review without any statistical comparisons! But for all that, it is a well written report that gets its key messages across clearly and succinctly, perhaps because the manuscript was not cluttered with t tests and

hazard ratios, and that is something editors welcome in any era.

And the key messages were important—the realisation that depression after stroke was not simply an understandable reaction to disability has stood the test of time. We now know that 33% of stroke patients suffer from depression (95% CI 29% to 36%).⁴ We now know that this depression leads to increased disability⁵ and probably increased mortality.⁶ Most importantly, we now know that antidepressants are effective in treating it.⁷ Countless patients round the world are benefiting from this knowledge and that is an impact that any researcher can be proud of.

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REFERENCES

1. **Folstein MF**, Maiberger R, McHugh PR. Mood disorder as a specific complication of stroke. *J Neurol Neurosurg Psychiatry* 1977;**40**:1018–20.
2. **Robinson RG**, Shoemaker WJ, Schlumpf M, *et al*. Effect of experimental cerebral infarction in rat brain on catecholamines and behaviour. *Nature* 1975;**255**:332–4.
3. **Carson AJ**, Machale S, Allen K, *et al*. Depression after stroke and lesion location: a systematic review. *Lancet* 2000;**356**:122–6.
4. **Hackett ML**, Yapa C, Parag V, *et al*. Frequency of depression after stroke: a systematic review of observational studies. *Stroke* 2005;**36**:1330–40.
5. **Pohjasvaara T**, Vataja R, Leppavuori A, *et al*. Depression is an independent predictor of poor long-term functional outcome poststroke. *Eur J Neurol* 2001;**8**:315–19.
6. **House A**, Knapp P, Bamford J, *et al*. Mortality at 12 and 24 months after stroke may be associated with depressive symptoms at 1 month. *Stroke* 2001;**32**:696–701.
7. **Hackett ML**, Anderson CS, House A, *et al*. Interventions for treating depression after stroke. *Cochrane Database Syst Rev* 2008;4:CD003437.

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