Accuracy of a single question in screening for depression in a cohort of patients after stroke: comparative study

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The rehabilitation of depressed stroke patients is more difficult than the rehabilitation of patients who are not depressed: their recovery in hospital is slower and less successful, they are less likely to regain normal lifestyles after discharge, and they have poorer survival rates long term.

Clinicians frequently fail to recognise depression in stroke patients. Deficits in cognition and communication associated with stroke complicate the assessment of behaviour that is symptomatic of depression.[1] Because doctors who are qualified to diagnose depression are scarce, a screening tool enabling clinicians to identify patients with problems may ensure productive referrals. In such a test, one needs to know the likelihood that patients who screen positive are depressed (positive predictive value) and that patients who screen negative are not depressed (negative predictive value).

The difference between the positive and negative predictive values—when the prevalence of the condition in a given population is taken into consideration—indicates the "incremental gain" (gain in diagnostic accuracy) obtained by using the test rather than by guessing. Knowing the incremental gain allows other clinicians to understand how the test may perform in a cohort.[2]

Our study determined the accuracy of a single item tool—the Yale-Brown obsessive-compulsive scale—for screening depression. We compared responses using this scale to those obtained using a clinical classification, the Montgomery Asberg depression rating scale (MADRS).

Participants, methods, and results

The Royal Liverpool and Broadgreen University Hospitals serve an urban population of 350 000, admitting approximately 600 patients with acute stroke annually. Consecutively admitted stroke patients are identified on a register.

Of 242 stroke patients registered April to November 1999, 110 were still in hospital at week 2 ($\geq$ day 7 and < day 14); 79 of these (44 men; median age 75 (70 to 79); median Barthel score (day 7) 8 (6 to 12)) were without severe cognitive or communication problems. Tests were given at this time because in week one patients with mild strokes (few problems) would be discharged and the majority of those with severe strokes would die. Patients still in hospital would probably survive to discharge but would also have physical or psychological problems, or both.

We determined in patients with recent stroke the prevalence of the MADRS (in which a score of > 6 = depressed) and the accuracy of the Yale in detecting depression defined by the MADRS. We asked patients to answer "yes" or "no" to the Yale question "Do you often feel sad or depressed?"[3][4]

Patients answering "yes" to the Yale question had significantly higher scores on the MADRS than those answering "no" (median score (interquartile range) 12 (7 to 19) v 4.5 (2 to 6); Mann-Whitney U = 220.5, P < 0.05). On the MADRS 43 (54%) were classified as clinically depressed; 37 answered "yes" to the Yale single question and six answered "no." Of the 36 classified as not depressed, eight answered "yes" and 28 "no." The values (95% confidence intervals) for the Yale test were sensitivity 86% (75% to 97%), specificity 78% (65% to 91%), positive predictive value 82% (71% to 93%), negative predictive value 82% (69% to 95%); 82% (73% to 91%) of cases were classified correctly.

The table shows the results obtained with the screening tool, as compared with guessing, for estimates of prevalence. For example, where the prevalence of depression in the cohort to be tested is 70%, the positive predictive value is estimated at 90% (based on our data), and therefore the incremental gain is 20%. That is, 20% more patients with depression would be identified correctly.

Comment

The Yale scale would help clinicians in screening for depression after stroke (regardless of prevalence of depression in the population). It requires minimal training. Because the patient need not read, write, or have normal speech to respond, the scale has considerable advantages over other tools.

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Incremental gain of the Yale-Brown obsessive compulsive scale in confirming or excluding the presence of depression in stroke inpatients two weeks after stroke

Assumed prevalence of depression	Test positive		Test negative	
	Predictive value	Incremental gain (%)	Predictive value	Incremental gain (%)
90%	0.97	7	0.38	28
80%	0.94	14	0.58	38
70%	0.90	20	0.70	40
60%	0.85	25	0.79	39
50%	0.80	30	0.85	35
40%	0.72	32	0.89	29
30%	0.63	33	0.93	23
20%	0.49	29	0.96	16
10%	0.30	20	0.98	8