Stroke unit care improved survival and function for 5 years after an acute stroke


Objective

To determine whether stroke unit (SU) care improves survival and functional status and increases the proportion of patients living at home after 5 years.

Design

Randomized controlled trial with 5-year follow-up.

Setting

University hospital in Norway.

Patients

220 patients (mean age 73 y, 51% men) hospitalized with acute stroke. Exclusion criteria were (subdural hematoma, subarachnoid hemorrhage, symptoms for > 1 week), deep coma at admission, or residence in a nursing home before onset of symptoms.

Intervention

110 patients were allocated to care in the 6-bed SU; a standardized program of up to 42 days of diagnostic evaluation, treatment for the acute phase of disease, rehabilitation, and family and patient education from a staff team*. 110 patients were allocated to medical care, physiotherapy, and occupational therapy on a general ward.

Main outcome measures

Survival, proportion of patients living at home, and functional status measured by the Barthel Index (BI).

Main results

Intention-to-treat analysis was used. At 5 years, Kaplan–Meier survival curve analysis showed that survival was higher in the SU group than in the ward care group (41% vs 29%, P = 0.04). More patients who received SU care were living at home (P = 0.006), were independent (BI score ≥ 95) (P = 0.004), or were at least partly independent (BI score ≥ 60) (P = 0.006).

**Stroke unit care vs general medical ward care**

<table>
<thead>
<tr>
<th>Outcome at 5 y</th>
<th>Stroke unit</th>
<th>Ward care</th>
<th>RBI (95% CI)</th>
<th>ABI (EER-CER)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living at home</td>
<td>34.5%</td>
<td>18.2%</td>
<td>90% (20 to 206)</td>
<td>16.3% (4 to 21)</td>
<td>6</td>
</tr>
<tr>
<td>Barthel Index score ≥ 60</td>
<td>34.5%</td>
<td>18.2%</td>
<td>90% (20 to 206)</td>
<td>16.3% (4 to 21)</td>
<td>6</td>
</tr>
<tr>
<td>Barthel Index score ≥ 95</td>
<td>24%</td>
<td>9%</td>
<td>160% (35 to 410)</td>
<td>15% (4 to 20)</td>
<td>7</td>
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†Abbreviations defined in Glossary; RBI, ABI, NNT, and CI calculated from data in article

Commentary

Substantial evidence now shows that a specialized SU improves outcome better than general medical wards. In this study, Indredavik and colleagues have shown that patients treated for acute disease in an SU have better survival and functional outcome at 5 years than patients treated in a general medical ward. The main difference in outcome occurred within the first 6 weeks of the trial and was maintained at 5 years. The magnitude of these findings is similar to that of outcomes found by the Stroke Unit Trialists' Collaboration (1). Meta-analysis of 19 randomized trials showed that SU care was associated with reduced death (OR 0.83, 95% CI 0.69 to 0.98) and reduced death combined with dependency (OR 0.69, CI 0.59 to 0.82) with follow-up of 6 to 12 months.

Dedicated SUs differ from general medical wards because they use clinical pathways for diagnosis, treatment, prevention of complications, and rehabilitation. Interdisciplinary teams of physicians, therapists, and nurses coordinate medical management, rehabilitative therapy, and stroke education aimed at reaching defined medical and functional goals before the patient is discharged. SUs also reduce cost by decreasing medical complications (2).

Patients with stroke who receive early rehabilitation therapy learn functional skills that enhance independence and encourage use of neurologically impaired limbs. Patients who do not receive early therapy tend not to use affected limbs and learn to depend on others. This hypothesis—that “learned nonuse” may affect functional recovery—is supported by research in both animals and humans (3).

Use of newer medical therapies for stroke, such as intravenous recombinant tissue plasminogen activator, requires well-organized stroke care because of the narrow treatment window. As more treatments for acute disease become available, hospitals that care for patients with stroke will need to organize interdisciplinary stroke teams and programs (4). As with coronary care units, SUs that incorporate rehabilitation and education will be the most successful.

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References