Postoperative Delirium and Functional Decline After Noncardiac Surgery

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1-Summary of Existing Knowledge:

Delirium is a frequent complication of hospitalization for older patients. Postoperative delirium is common in the geriatric population as well, causing prolonged hospital stays, greater cost of hospitalization, and more rehabilitation and skilled nursing facility placements after discharge. It is also known that delirium has consequences beyond the acutely delirious period. People who have experienced delirium following cardiac surgery carry a much higher risk of functional decline up to a year out. This is also the case following hip fractures as delirium is associated with decline in ADLs, placement in a nursing home, and death within a month and possibly up to six months.

2-Study Hypothesis

Older adults who experience delirium following noncardiac surgery will have a functional decline 3 months postoperatively

3-Methods Review

a. Population Chosen: one thousand two hundred eighteen non-demented people age>60 from 8 countries undergoing noncardiac surgery. Participants were enrolled between November 1994 and May 1996. Design was originally to look at postoperative cognitive dysfunction in older adults undergoing major noncardiac surgery, looking at the role of age, hypoxemia, and hypotension. Exclusion criteria were people with CNS disease, Parkinson’s disease, MMSE <24, prior neuropsych testing, use of tranquilizers or antidepressants, alcohol or drug dependence, those not expected to survive to 3 mo follow-up. Of the original population, 270 subjects were lost to follow up.

b. Intervention: Preoperatively participants were interviewed regarding six items relating to daily function. One point was given for ability to perform each of the following: assistance with ‘bodily care’, dressing, shopping, preparing meals, house work, and whether they could participate in multiparty conversations. The participants were questioned again in person at a 3 month follow-up visit. Those whose score had decreased by at least one point were considered to have a decline in function.

Regarding delirium, trained testers examined each patient in person from post-op days zero thru post-op day three using the orientation questions from the Mini Mental State Exam as well as information in the medical chart. From post-op day 4 till discharge, a review of the medical chart in conjunction with nursing observation was used to assess for delirium. The trained testers also used criteria from DSM-3 to diagnose delirium: acute disturbance of attention,
fluctuation in attention, and disorganized thinking. Duration of delirium was categorized as 1-2 days vs. 3 or more days.

4. Results:

a. 948 participants completed the three month follow-up. 270 pts who were included in the original assessment did not complete 3mo assessment due to death, withdrawal from study, or loss to follow up. This group tended to be older, male, have had longer surgeries, and have been diagnosed as having post-op delirium. In total, 6% of patients developed post-op delirium.

b. Table 1

c. Table 2

d. Of 948 patients who were followed up after 3 months, 20% experienced a functional decline.

e. Functional decline occurred in 19% of pts who did not become delirious, 32% of pts who had 1-2 days of documented delirium, 55% of pts who experience 3 or more days of delirium.

5. Author’s Conclusions: This study is further evidence that postoperative delirium has consequences beyond the immediate cost to the patient, family, hospital system. There is evidence for significant functional decline in the time period long after most postoperative delirium would have been expected to resolve.

6. Limitations:

a. loss to follow-up of a significant number of participants. 18% of those missing from final analysis were diagnosed with delirium as opposed to only 6% of those who were available for follow-up. Inclusion of these individuals would likely have strengthened the findings/conclusions of the study.

b. six-item questionnaire used to assess functional status has not been validated. Additionally, self-report method is biased and has its own inherent limitations.

c. measurement/diagnosis of delirium used criteria that are now outdated, did not utilize CAM or DSM 4 criteria.

d. is there a confounding/other factor causing both predisposition to delirium and postoperative functional decline. Even if we do our best in pre-operative risk stratification for elderly patients at risk for delirium and take preventive steps, will this same at-risk population succumb to functional decline in the post-operative period?
7. Critique/Implications for Practice:

- Importance of assessment for pre-op delirium risk

- Informed discussion with elderly patients and their families regarding risk of inpatient delirium and its implications for return to previous level of function.

- Discussions with nursing and ancillary staff regarding methods to avoid delirium for older hospitalized pts.

- Discussions with surgeons regarding timing of surgery as non-emergent surgery has been shown in the past to carry a lower risk of postoperative delirium, possibly ultimately leading to improved functional recovery after surgery.

- Importance of involving geriatricians in pre-operative assessment.

- Further research needed regarding benefit of delirium prevention/intervention in prevention of functional decline.