Subarachnoid Hemorrhage Patients: To Transfer or Not to Transfer?

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Introduction and Methods

Prompt management of aneurysmal subarachnoid hemorrhage (SAH) is critical. Literature is inconclusive regarding outcomes for patients directly-admitted to specialized centers versus transferred from lower-volume hospitals. Providers are often unclear about the safety of transferring critical patients. This study evaluated the "transfer effect" in a large sample of aneurysmal SAH patients undergoing treatment. Using NIS 2002-2007 data, we analyzed outcomes of SAH patients treated with coil or clip procedures. Analyses studied the effect of direct-admit versus transfer admission on mortality, discharge disposition, complications, Length of stay (LOS) and total charges.

Results

Of 47,114 patients, 31,711 (67.3%) were direct-admits and 15,403 (32.7%) were transfers. More transfer patients were coiled than direct-admits (45.3% vs. 33.7%, p<.0001) and fewer underwent ventriculostomy (26.6% vs. 31.5%, p=.003). Older age (OR 1.2, p<.0001), higher disease severity (OR 1.4, p<.0001), lower volume (OR 1.5, p<.0001), and ventriculostomy (OR 2.1, p<.0001) increased mortality and predicted non-routine discharge, complications, LOS, and charges. Transfer patients had similar mortality (OR 0.9, p=.13) and complications (OR 0.9, p=.22) as direct-admits but incurred higher non-routine discharge (OR 1.3, p=.002). Analysis of grade V patients demonstrated similar outcomes between direct-admits and transfers; however, charges for treating transfer patients were notably higher ($401,386 vs. $242,774, p=.03).

Conclusions

Patients treated in lowest volume hospitals were 1.6 times more likely to die than those treated at the highest quintile hospitals. Among the critically-ill grade V patients, transfer to higher volume specialized centers did not increase the likelihood of a poor prognosis.

Figure 1a/1b

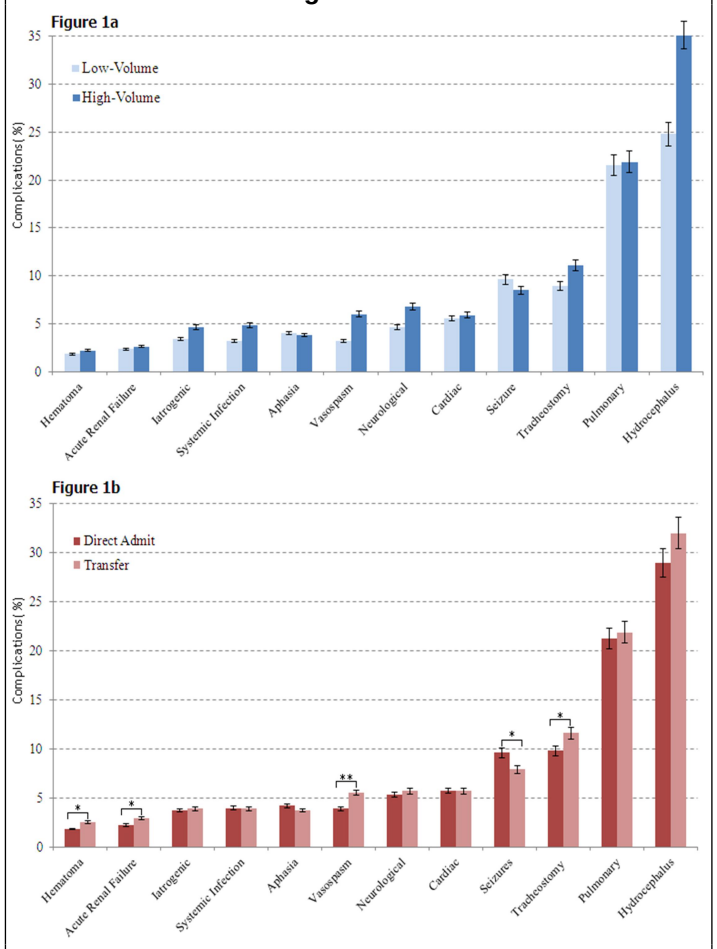

Figure 1a: Complication rates for high and low volume hospitals. Significance at the .05, .01, and .001 level are denoted by *, **, and *** respectively. Five percent error bars are included.Figure 1b: Complication rates for direct-admit and transfer patients. Significance at the .05, .01, and .001 level are denoted by *, **, and *** respectively. Five percent error bars are included.

Figure 3a/3b

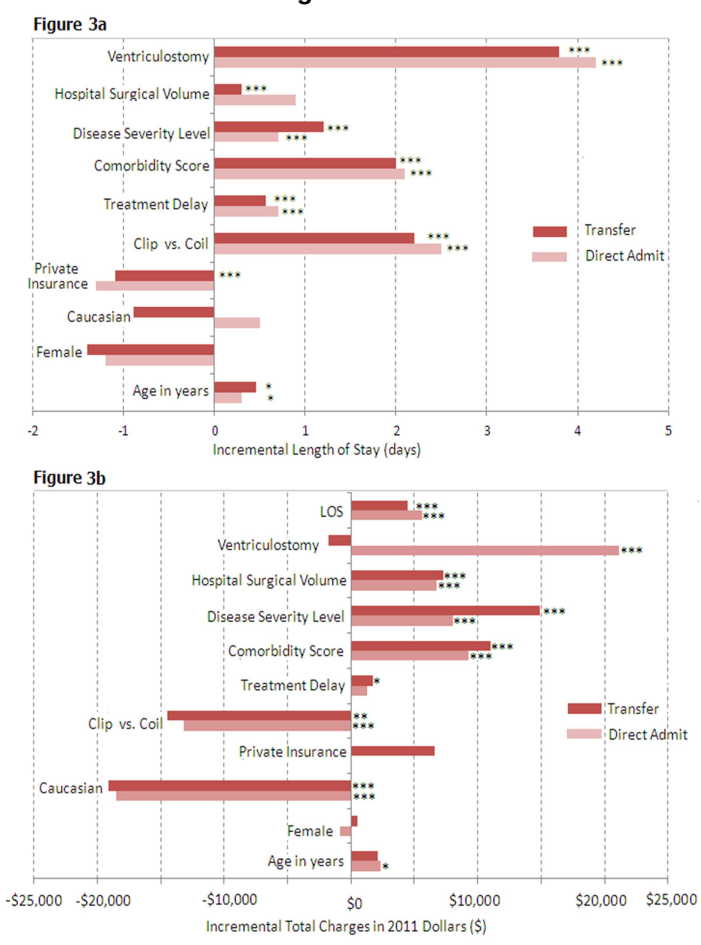

Figure 3a: Multivariate analysis for increments in-hospital length of stay by type of admission (direct-admit versus transfer). Significance at .05 (*), .01 (**), and .001 (***) levels are provided. Figure 3b: Multivariate analysis for increments in total charges by type of admission (direct-admit versus transfer). Significance at .05 (*), .01 (**), and .001 (***) levels are provided.