

Is Mortality an Adequate Measure of Neurosurgical Care?

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Introduction

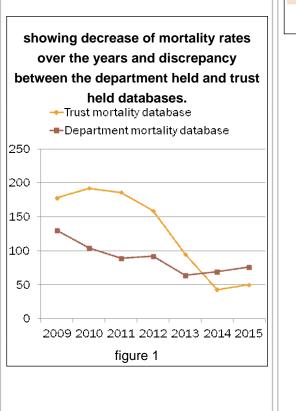
Results

Having been trialled successfully in cardiac surgery, publishing surgeon specific mortality has been a recent initiative to improve the quality of care in many surgical specialties including neurosurgery (Neurosurgical National Audit Programme (NNAP). But there is little data available as to whether mortality is indeed a good indicator of the quality of care in neurosurgery. We conducted a study to test this hypothesis; by calculating mortality rates form hospital data and assessing the variables contributing to it.

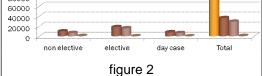
Methods

Hospital mortality records, admissions, clinic visits and referrals, from January 2009 to January 2016 were reviewed. In depth analysis of mortalities from January 2012 to January 2016. Causes of death were divided into unavoidable, potentially avoidable and avoidable deaths according to preset criteria. *

Potentially avoidable must meet three criteria: injury / pathology must be survivable, delivery of care is suboptimal, and error in care must be directly or indirectly implicated in the death of the patient. Avoidable deaths were defined as those where an error clearly led to patient death On cross checking the mortality with another hospital held database source; 60 -90% error rates were detected. Data used to populate national mortality rates may have very high error rates. Out of 200 deaths (2012 to 2016) 93% were emergency admissions; 40% died without having had surgery. Only seven deaths (5 elective admissions) were deemed to be potentially avoidable (0.03% of admissions/0.006% of total neurosurgical service), i.e these were cases where more optimal delivery of care might have affected the outcome



neurosurgical mortality, admissions, OPD attends, emergency attends, operations from Jan 2009 – Jan 2016. • outpatient and emernery attends (2009-20016) • admission (2009-2016) • operations (2009-2016) • Deaths 200000 180000 100000 100000 • Comparison (2009-2016) • Deaths



cases with potentially avoidable deaths

Cases with potentially avoidable deaths	
CPA vestibular schwannoma in 80y old	Should tumour surgery have been avoided and a shunt placed instead?
NF2 patient, multiple intracranial tumours with increased ICP	Inadequate placement of shunt
Acute subdural haematoma	Delay in evacuation
Chiari malformation	Sub optimal foramen magnum decompression , post op respiratory and motor problems
Left large sphenoid wing meningioma	Delay in decompressive craniectomy
Vestibular schwannoma	Misplaced shunt led to a series of other complications
Acute subdural haematoma	Inadequate decompression

table 1

Conclusions

- Mortality rates in neurosurgery are a poor reflection of the care provided as most deaths are unavoidable and are predetermined by the presenting pathology.
- Avoidable mortality represents less than 0.006% of neurosurgical care.
- Different subspecialties in neurosurgery will have highly variable mortality rates.
- Data which collect mortality and has been used to populate national mortality have high error rates.

Learning Objectives

- More avoidable problems leading to morbidities in patients rather than mortalities.
- Using the morbidity index alongside the mortality rate can help providing better patient care.

References

*Teixeira PGR, Inaba K, Hadjizacharia P, et al. Preventable or Potentially Preventable Mortality at a Mature Trauma Center. J Trauma. 2007; 1338-47