

Access this article online

Website: [www.ijaweb.org](http://www.ijaweb.org)

DOI: 10.4103/0019-5049.135024

Quick response code



## From pre-operative comorbidities to post-operative cognitive dysfunction: The challenging face of geriatric anaesthesia

Geriatric anaesthesia has kept pace with advances in geriatric surgery over the years on a platform provided by increasing scientific evidence. Comorbidities involving various systems can impact the functional and clinical outcome in geriatric patients undergoing surgeries. Chronological age, once an important 'risk' consideration for anaesthesia has been replaced by the principle of physiological age, favoured by accumulating evidences.

Evidences in geriatric patients related to comorbidities of cardiovascular system and respiratory system have helped in improving post-operative outcomes, based on proper pre-operative risk assessment and optimization. Diminished respiratory functions and diminished sensitivity to hypoxia and hypercapnoea expose geriatric population to high risks of post-operative respiratory complications.<sup>[1]</sup> Among the other systems, perioperative renal failure is an independent predictor of post-operative morbidity. Since creatinine clearance gradually decreases over the years, measurement of glomerular filtration rate is more helpful in estimating the current renal threshold.<sup>[2,3]</sup> Autonomic neuropathy of diabetes, diminished gut motility and diminished hepatic functions makes geriatric patients vulnerable to side-effects of opioids and anaesthetic drugs.

Regional anaesthesia (RA) has advantages of reduced blood loss during surgery and decreased need for transfusion and related hazards, decreased incidence of deep-vein thrombosis and pulmonary embolism, better post-operative analgesia and lesser costs, all important considerations during geriatric anaesthesia.<sup>[4,5]</sup> General anaesthesia (GA) is indicated in presence of positioning difficulties, patients' refusal for RA and many other situations having contraindications

to RA. Useful guidelines as we know are in place for thromboprophylaxis in elderly patients in perioperative period and also the appropriate time to stop anticoagulants.<sup>[6]</sup>

Assessment of cognitive deficits and neurological status becomes difficult if the patient is already on anti-depressants and psychotropic drugs. Alternate forms of therapy, including herbal medicines can have interactions with anaesthetic agents.<sup>[7]</sup> Disturbed cognition arising from pain, trauma, metabolic disturbances, electrolyte imbalance or sluggish response to hypoxia and hypercapnoea and residual effects of general anaesthetics can be confused with actual neurological disorders.

Cognitive dysfunction after cardiac surgery is widely investigated and reported. In a prospective observational study, published in this issue of IJA, Madanmohan *et al.* assessed the predictors of post-operative cognitive dysfunction (POCD) in adult patients at low risk of developing POCD, undergoing elective cardiac surgery.<sup>[8]</sup> They found a potential correlation between multiple blood transfusions and enhanced incidence of POCD even in the absence of clinical conditions known to produce POCD.

Kotekar *et al.* prospectively studied elderly patients undergoing non-cardiac surgery under GA or RA.<sup>[9]</sup> The salient findings were similar to previous publications; greater risk of POCD with advancing age and in elderly female patients. The study, however, adds useful data to the current Indian literature. Inclusion of emergency surgeries would have contributed useful information for designing relevant therapeutic protocols.

**How to cite this article:** Bhaskar SB, Bajwa SJ. From pre-operative comorbidities to post-operative cognitive dysfunction: The challenging face of geriatric anaesthesia. *Indian J Anaesth* 2014;58:248-50.

Delirium and dementia which may be present in 42–90% of geriatric population (albeit with variable degrees) and presence of neurological comorbidities is usually associated with poor functional recovery.<sup>[10]</sup> For maintaining better perioperative neurological and clinical stability, psychotropic, anti-depressant, antiepileptic, anti-Parkinsonism and other drugs are recommended to be continued. Endocrinopathies in geriatric population can possibly enhance the deterioration in cognition. Hence, optimisation of endocrinological states needs special attention during the pre-operative period.<sup>[11]</sup>

Post-operative delirium in elderly is one of the most under diagnosed clinical entity in anaesthesiology practice, which enhances the morbidity and mortality on this subset of population. Some of the major points related to aetiological, pathophysiological, diagnostic and clinical aspects of POCD in the elderly have been described in a special article by Vijayakumar *et al.* (IJA\_8\_14 in this issue).<sup>[12]</sup> The article focuses on recognition of the symptomatology at an early stage so as to effectively anticipate and manage the post-operative complications. Besides, numerous clinical pearls have been suggested for the attending anaesthesiologist that can help him in adopting a proactive approach for its prevention and management both by non-pharmacological and pharmacological means. Geriatric surgical patients with cognitive dysfunction usually also show poor nutritional status, precipitating respiratory complications, delayed wound healing, poor recovery and also higher mortality.<sup>[13]</sup> Pain is a major contributor for cognitive dysfunction and effective strategies to reduce pain are to be adopted. Pre-operative sociobehavioural status, functional state, social support network and bio psychosocial perspectives may possibly influence the surgical outcome.<sup>[14]</sup> Geriatric patients may develop extreme anxiety and fear during the surgical period particularly under RA due to the inability to move the extremities; view of the masked personnel with impersonal behaviour, high-pitched sounds of electronic gadgets and cautery, and surgical instruments add to their woes. Anaesthetic strategies should be developed so as to enhance patient satisfaction during the perioperative period. Strategies such as early post-operative rehabilitation, adequate pain relief, nursing education, proactive geriatric consultation, avoiding hypoxia and hypotension will allow a smooth surgical and functional outcome. There are conflicting evidences for and against general and RA in relation to POCD in geriatric patients.

Early POCD may lead to prolonged hospital stay and higher morbidity and mortality.<sup>[15]</sup> Pre-operatively, it is extremely difficult to identify the presence of cognitive dysfunction and is commonly missed during pre-anaesthetic check-up. Among the available tools Mini Mental Scale Examination, Confusion Assessment method and some other neurophysiological tools are available to assess the cognition state; their interpretation still remains a matter of debate in geriatric surgical population.<sup>[12]</sup>

The number of people aged 80 years or older is expected to quadruple to 395 million between 2000 and 2050 and the risk of dementia to rise to 25–30% in people aged 85 or older having some degree of cognitive decline.<sup>[16]</sup> As we strive to make progress in geriatric anaesthesia, apart from evaluating clinical comorbidities, sociobehavioural, cognitive and psychological assessment is gaining importance. Besides achieving clinical targets of recovery during elective and emergency surgery, providing a pleasant geriatric specific psychological and supportive care can enhance patient satisfaction with better outcomes.

**S Bala Bhaskar, Sukhminder Jit Singh Bajwa<sup>1</sup>**

Department of Anaesthesiology and Critical Care,  
Vijayanagar Institute of Medical Sciences, Bellary, Karnataka,  
<sup>1</sup>Department of Anaesthesiology, Gian Sagar Medical College  
and Hospital, Patiala, Punjab, India.  
E-mail: sbalabhaskar@gmail.com

## REFERENCES

1. Kulagina TI, Stamov VI, Nikoda VV, Dobrovol'skaia TN. Cardiorespiratory exercise tolerance tests: A preoperative surgical risks assessment in elderly patients. *Anesteziol Reanimatol* 2013;25-9.
2. Naughton C, Feneck RO. The impact of age on 6-month survival in patients with cardiovascular risk factors undergoing elective non-cardiac surgery. *Int J Clin Pract* 2007;61:768-76.
3. Bajwa SJ, Sharma V. Peri-operative renal protection: The strategies revisited. *Indian J Urol* 2012;28:248-55.
4. Memsoudis SG, Sun X, Chiu YL, Stundner O, Liu SS, Banerjee S, *et al.* Perioperative comparative effectiveness of anesthetic technique in orthopedic patients. *Anesthesiology* 2013;118:1046-58.
5. Luger TJ, Kammerlander C, Gosch M, Luger MF, Kammerlander-Knauer U, Roth T, *et al.* Neuroaxial versus general anaesthesia in geriatric patients for hip fracture surgery: Does it matter? *Osteoporos Int* 2010;21 Suppl 4:S555-72.
6. Kearon C, Akl EA, Comerota AJ, Prandoni P, Bounameaux H, Goldhaber SZ, *et al.* Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest* 2012;141 2 Suppl:e419S-94.
7. Bajwa SJ, Panda A. Alternative medicine and anesthesia: Implications and considerations in daily practice. *Ayu*

- 2012;33:475-80.
8. Shiraboina M, Ayya S, Srikanth Y, Kumar RV, Durga P, Gopinath R. Predictors of postoperative cognitive dysfunction in adult patients undergoing elective cardiac surgery. *Indian J Anaesth* 2014;58:334-6.
  9. Kotekar N, Kuruvilla CS, Murthy V. Post-operative cognitive dysfunction in the elderly: A prospective clinical study. *Indian J Anaesth* 2014;58:263-8.
  10. Bruce AJ, Ritchie CW, Blizzard R, Lai R, Raven P. The incidence of delirium associated with orthopedic surgery: A meta-analytic review. *Int Psychogeriatr* 2007;19:197-214.
  11. Kohl BA, Schwartz S. Surgery in the patient with endocrine dysfunction. *Med Clin North Am* 2009;93:1031-47.
  12. Vijayakumar B, Elango P, Ganessian R. Post-operative delirium in elderly patients. *Indian J Anaesth* 2014;58:251-6.
  13. Dudrick SJ. Nutrition management of geriatric surgical patients. *Surg Clin North Am* 2011;91:877-96, ix.
  14. Koval KJ, Meek R, Schemitsch E, Liporace F, Strauss E, Zuckerman JD. An AOA critical issue. Geriatric trauma: Young ideas. *J Bone Joint Surg Am* 2003;85-A:1380-8.
  15. Rudolph JL, Marcantonio ER. Review articles: Postoperative delirium: Acute change with long-term implications. *Anesth Analg* 2011;112:1202-11.
  16. Interesting facts about ageing; 28 March, 2012. Available from: <http://www.who.int/ageing/about/facts/en/>. [Last accessed on 2014 Apr 12].