Editorial

Postoperative Issues in Geriatric Anaesthesia, Continuing Medical Care of the Elderly

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EDITORIAL

There exists no magic wand that can completely reverse or halt the physiological process of aging. Geriatric anaesthesia is emerging as a highly dedicated branch of perioperative medicine, especially since the number of people entering the 65 years plus bracket is steadily increasing. The incidence of co-morbidities and thus the need of polypharmacy rise with increasing age, especially after the age of 80 years [1,2]. Anaesthesiologists and Intensivists have to be prepared and adequately trained to handle the increasing challenges posed by geriatric patients in day-to-day practice. Unfortunately, there are no standard guidelines and protocols [2] for the perioperative care of the elderly patients. It must be remembered that no two elderly patients are similar in the issues concerning them and hence, a cookbook recipe for their management will not help. This is more so in the postoperative period, where each patient’s management must be individualized and tailored to specific needs. It has been emphasized that there is still a long way to go to ensure good practice and appropriate care of the elderly people in hospitals [3]. The use of risk assessment tools to stratify care and utilize appropriate intra- and postoperative monitoring techniques to minimise morbidity and mortality in the elderly has been recommended [4,5]. The provision of certain perioperative equipment like active warming devices, anti-pressure sore apparatus and thromboembolism prophylaxis, is mandatory for the elderly and budgets must permit their purchase and maintenance for both theatres and wards.

The services of geriatricians and other professionals who specialize in care of the elderly are paramount in best practice implementation in terms of leadership, clinical services, education, training and research. The working party of the Association of Anaesthetists of Great Britain and Ireland (AAGBI), in its guidelines for perioperative geriatric care in 2014, recommends the use of specific checklists [6] by anaesthetists caring for patients over the age of 75 years. It recommends the inclusion of geriatric anaesthesia training in the teaching curricula of medical schools. The AAGBI 2001 guidelines outlined 5 principal points [7] in perioperative care of the elderly, which include: “Fluid management, Pain, Nutrition, Rehabilitation and High dependency care”.

Aging is a physiological process (and not a pathological one!) associated with decline in all organ system function at the rate 1% per year after 40 years of age [8,9]. This reduction in organ reserve limits the physiological response to stressors, including illness, anaesthesia and surgery. The physiological changes involve almost all body systems leading to decrease in reserves and impaired compensation to any insult to the body.

The most important factor causing negative postoperative outcome in the elderly is the improper optimization of pre-existing diseases, especially cardiac (hypertension, coronary artery disease, arrhythmias), pulmonary (obstructive and restrictive lung disease, pneumonia), renal (chronic kidney disease, urinary problems) and neuronal diseases (stroke, dementia, parkinsons and alzheimers disease). Antiparkinsonian [9] regimen should be continued up to the time of surgery and levodopa may need to be re-instituted early due to its short half life, to prevent occurrence of muscle rigidity, tremors, confusion or pharyngeal dysfunction. The American College of Surgeons (ACS) has also enunciated guidelines [10] for improving quality of perioperative geriatric care. Thirteen quality indicators rated as valid for morbidity assessment in the aged surgical patients include: “preoperative investigations panel; cardiac evaluation as per ACC/AHA guidelines for risk stratification in elective surgery; physical cardiopulmonary functional assessment for non-elective surgery; documentation of further cardiac evaluation performed; basic screening for lung disease; documentation of further pulmonary evaluation done; creatinine clearance (mL/min) estimation; further medical evaluation done if l<30ml/min; presence or absence of diabetes mellitus; if diabetic, then assess mechanism and adequacy of glycemic control; if previously taking thyroid hormone therapy, then check thyroid stimulating hormone level done 1 year before current elective surgery; history of tobacco or alcohol use; if patient is a smoker, then encourage to stop it at least 8 weeks preoperative and document the smoking cessation discussion”.

Frailty [11] refers to loss of physiologic reserve that makes a person more vulnerable to disability during and after stress. It is defined as a clinical syndrome in which 3 or more of the frailty criteria (Weight loss, Exhaustion, Physical Activity, Walk Time and Grip Strength criterion) are met. It is predictive of disability, hospitalization and death on long-term follow-up.

The main postoperative problems in the elderly include: Postoperative Delirium (POD), Postoperative Cognitive dysfunction (POCD), Pain and Delayed return to normal routine, apart from morbidities due to concurrent cardiac, pulmonary, renal, cerebral or hepatic dysfunction and Delayed return to normal routine, apart from morbidities due to concurrent cardiac, pulmonary, renal, cerebral or hepatic dysfunction.

Delirium [12] is well described in the Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV–TR). The key characteristics are a change in mental status characterized by a reduced awareness of the environment and a disturbance in attention. The Cochrane review on delirium prevention in hospitalized elderly patients found that there is a paucity of high-quality research on delirium prevention. Etiology of postoperative delirium in the elderly can be divided into 3 factors: pre, intra and postoperative. Preoperative causes include CNS pathology, poly-pharmacy, drug intoxication or withdrawal, endocrine or metabolic abnormalities and mental status changes (depression, dementia, anxiety).

Intra-operative causes depend on the type and duration of surgery and anesthesia. Cardiac and orthopedic surgeries and those associated with complications like hypotension, embolism or hypoxemia are prone to develop postoperative delirium. Surgical factors like hypoperfusion, micro-emboli, fat embolism and cerebral ischemia can cause postoperative delirium, which can be difficult to treat. If possible, it is better to avoid drugs that affect cognitive function, like diazepam, resepine, hydrochlorothiazides, propranolol, thiadizine, meperidine, cimetidine, anticholinergics and phentothiazines. Glycopyrrolate [13], a quaternary compound, does not cross the blood brain barrier and is the drug of choice in the elderly when an anticholinergic is needed. Postoperative causes include hypoxia due to any cause, hypocarbia, pain, sepsis, sleep deprivation and electrolyte or metabolic abnormalities. Continuous oxygen saturation monitoring and use of supplemental oxygen for postoperative hypoxemia is recommended to decrease the incidence of POD. Delirium due to alcohol or hypnotic withdrawal is usually dramatic and occurs 12-48 hours after surgery, which can confound the diagnosis. Intravascular volume depletion as well as hypervolemia can lead to alteration in mental function. Diuretic use, diabetes mellitus, fluid overload and dysesthetymesias or acid-base disorders can also herald POD.

It has been found that women have a greater predilection for delirium and men for cognitive dysfunction. The CAM [14] (Confusion Assessment Method) is used to test delirium in the PACU (post anesthesia care unit). Specific preventive interventions include prominent presentation of orienting information, like date, month and time, name of hospital personnel, cognitive stimulation activities, exercise, feeding and fluid assistance, and non-pharmacological sleep aids (e.g., relaxing music and massage). Prophylaxis against POD in select patients can be achieved with ketamine, rivastigmine (a cholinesterase inhibitor) and haloperidol. The drug of choice for POD remains haloperidol. It is an antipsychotic D2 dopamine receptor antagonist, administered at a dose of 0.5–1 mg intravenous, every 10–15 min until the behavior is controlled.

Etiology of postoperative cognitive decline [15] includes perioperative hypoxemia and ischaemia. POCD is the result of brain cell damage caused by toxic substances or hypoxia. The choice of anaesthesia (general vs regional) has not been found to be influential in its occurrence. Short-term POCD does not persist beyond a few days after surgery and is best assessed by neuropsychological (NP) assessment.

Long-term POCD lasts for weeks, months or longer and screened using NP tests like Mini-Mental State Examination [16] (MMSE). The incidence of initial deterioration in older patients is high (25% at 2–10 days) with gradual resolution (10% at 3 months, 5% at 6 months, and 1% at 1 yr). Prevention and treatment of postoperative cognitive decline is still undefined. Careful documentation of the preoperative cognitive status (using Mini-Cog Test) is strongly recommended, as POCD is difficult to quantify without record of the baseline cognitive status. With respect to mechanistic understanding of POCD, new modalities such as cerebral oximetry and detection of serum markers of inflammation show promise.

Acute pain management [17] in the older adult is both challenging and rewarding. Pain-transmitting C and Aδ peripheral nerve fibre function declines progressively with age. Experimental pain threshold, the point at which pain is first felt, is likely slightly higher. However, pain tolerance, the maximum pain level endured, is probably reduced. Problems in pain assessment arise from differences in reporting cognitive impairment and difficulties in measurement. In cognitively intact older persons, several pain assessment tools [18] have been validated including the Verbal Descriptor Scale, Visual Analogue Scale, Numerical Rating Scale and Faces Pain Scale. In nonverbal cognitively impaired individuals, behavioral pain scales may be more reliable.

Analgesic therapy needs to balance the potential efficacy with the incidence of interactions, complications or side effects in the post-operative period. Regional techniques and ultrasound-guided nerve blocks must be utilised wherever possible. PCA (patient controlled analgesia) pumps may also be utilised in cognitively normal patients, under appropriate monitoring. Multimodal analgesia [18], using acetaminophen, non-steroidal anti-inflammatory drugs or other non- opioid drugs, is the best way to decrease opioid consumption and thus opioid-related adverse events. Tramadol, while commonly used to treat acute and chronic pain in adults, is associated with development of POD in elderly [8]. POCD is closely linked to delirium in the perioperative period, which is in turn related to acute pain and pain treatment. Both worsen the clinician’s ability to assess pain and may lead to inappropriate treatment. Context-sensitive analgesia is the new dictum where pain management is done according to the patient characteristics (age, co morbidity, medication use or abuse, preoperative pain, level of education and compliance), surgical procedure and postoperative scenario [5]. Chronic musculoskeletal pain from degenerative bone, joint...
and spine diseases, neuropathic pain due to diabetic neuropathy, postherpetic neuralgia and post-stroke or amputation pain is quite prevalent in the elderly population [4]. A dedicated acute and chronic pain service is indispensable for a better outcome in the elderly.

The ability to return to normal routine and activities of daily living early is an indicator of quality of care and improves overall patient satisfaction. Future focus must be on safe ambulatory anaesthesia and proactive care of the elderly surgical patient. All the previous enumerated factors must go hand-in-hand to achieve this objective and bridge the gargantuan gap in geriatric care. The elderly patients must be treated with dignity and compassion by all the perioperative team members. The future calls for a holistic geriatric management unit in all hospitals, specialized training in geriatric and palliative care as well separate geriatric anaesthesiologists and pain specialists to make perioperative geriatric care reach its zenith.

REFERENCES


