



BMH Medical Journal 2015;2(4):110-112 **Brief Review**

Post Operative Cognitive Dysfunction (POCD) in Geriatric Population

MC Rajesh

Baby Memorial Hospital, Kozhikode, Kerala, India. PIN: 673004

Address for Correspondence: Dr. MC Rajesh MD, MBA, Senior Consultant Anaesthesiologist, Baby Memorial Hospital, Kozhikode, Kerala, India. PIN: 673004. E- mail: rithraj2@yahoo.co.in

Key Words: Geriatric anaesthesia, Post-op cognitive dysfunction, Haloperidol

Introduction

Post-operative mental dysfunction and confusion in aged patients is a well recognized entity. Commonly known as post-operative delirium and cognitive dysfunction (POCD), these are important for any peri-operative physician dealing with geriatric population. The incidence is more in older patients with pre-existing impairment [1]. Impact of POCD is grave. This can result in poor rehabilitation outcome and increased hospital stay [2]. Incidence ranges from 15-50% with <5% for cataract surgery and as high as 60% after hip replacement procedures [3].

Possible causes and aetiology

Even though the exact aetiology is not fully elucidated, different mechanisms are being implicated, predominant being imbalance between central nervous system cholinergic and dopaminergic activity. It is proposed that a relative underactivity of cholinergic system coupled with excessive dopaminergic activity can precipitate POCD. This theory is supported by the fact that delirium could be precipitated by the use of anticholinergic or dopaminergic medications [4]. Inflammatory response to surgical stress is believed to play an important role in the development of post-op delirium [5]. Evidence to this is found by the elevated levels of inflammatory mediator chemokines during post-operative stage in patients who become delirious after cardiac surgery [6]. It is believed to happen as a result of leucocyte migration into the central nervous system (CNS) [5]. In vitro studies have shown that chemokines are capable of interrupting an intact blood brain barrier [6]. Supporting the inflammatory hypothesis is the fact that elevated levels of C - reactive protein were found in patients who develop POCD following hip surgery [5].

Many pre-operative and peri-operative factors or events have been implicated as possible factors for the development of POCD. Pre existing cognitive impairment is one proved factor with strongest association for the development POCD [7]. Other pre-operative risk factors include geriatric age group, visual or hearing impairment, improperly treated pain, alcohol/narcotic addiction [5]. Peri-operative contributory factors include blood loss, multiple peri-operative transfusions and post-operative haematocrit value of < 30%.

Even though it is logical to conclude that peri-operative events like hypotension or hypoxia may lead to POCD, strong evidence to support the same are lacking [8]. Inouye attributed certain precipitating factors to POCD like use of peri-operative physical restraints, bladder catheter and fluid and electrolyte abnormalities [4]. There are at present no guidelines regarding drugs to be avoided to safeguard against POCD. But since POCD is proportional to the number of medications the patient is prescribed, it is logical to avoid poly pharmacy in the peri-operative settings. More than three medications added 24-48 hours before the onset of delirium is considered as a potent precipitating factor [4]. Earlier published data failed to associate any type of anaesthesia as a definite risk factor [9]. But Rasmussen et al in a recent randomised study showed a definite advantage of regional anaesthesia in reducing the risk of early POCD [10]. Regional anaesthesia has shown a definite advantage in reducing the incidence of POCD in the initial 3 months but not beyond [10]. But even the early reduction in POCD assumes significant in terms of immediate physical recovery and better co-operation for post-operative care plan [5].

Prevention and treatment

Many authors have suggested certain risk reduction strategies against POCD. This includes proper visual and hearing equipments, attention to pre-operative pain, early mobilisation and avoiding physical restraints [11,12]. It is imperative to treat electrolyte imbalances and fluid deficit as well as ensuring normal sleep-awake cycle and the presence of family in the post-operative care plan. If we can entrust competent caregivers and adequate support services, undertaking the procedure as a day care procedure will go a long way in reducing the incidence of POCD.

Haloperidol (0.5-1 mg) is a proved agent in cases of pharmacological intervention [13]. Lorazepam is preferred in cases of alcohol or benzodiazepine withdrawal [13]. Use of haloperidol as a prophylactic agent has been shown to reduce the severity of POCD but no change in the duration [13]. Literature also shows evidence of effective treatment with cholinesterase inhibitors donepezil and gabapentine [14,15].

Summary

Development of POCD is a potential complication which can add to the morbidity of geriatric patients. Chance of POCD increases with advancing age. Some potential risk factors have been identified and risk reduction strategies involve identifying these potential agents and minimizing or correcting them. There is limited evidence with respect to pharmacological agents. Haloperidol is probably an agent being used extensively. Agents like donepezil and gabapentine are reported to be effective but yet to become popular.

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