

Postoperative Delirium in Geriatric Patients

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Diagnosis of Delirium

Delirium is a major complication that is seen increasingly among geriatric patient groups and occurs frequently during the postoperative period. Although the frequency changes according to the type of the surgery, delirium is seen among geriatric patients with a mean ratio of 10% after major elective noncardiac surgery [1]. It occurs generally on the first day and resolves within two days [2]. Postoperative delirium is associated with an increase in length of hospital stay, mortality risk and physical dependency [3].

Delirium is an acute-onset syndrome characterized by mental symptoms accompanying the instability and fluctuations in the state of consciousness. We encounter delirium in various forms such as hyperactive, hypoactive and mixed type. The frequency of occurrence is 71% in hypoactive and 29% in mixed type, and hyperactive type is infrequently seen [4]. The hypoactive form is the most difficult type to diagnose and is overlooked especially after

ABSTRACT

Delirium is a major complication that is frequently seen among geriatric patients and occurs during the postoperative period. Delirium is an acute-onset syndrome that is characterized by mental symptoms accompanying instability and fluctuations in the state of consciousness. The current hypothesis regarding the mechanism of delirium is a combination of an increase in the dopaminergic activity and decrease in cholinergic and GABAergic activity. There are many risk factors for the development of postoperative delirium; age and pain are among the most important ones. Although meperidine is a strong analgesic, it is not recommended for postoperative pain management since it may cause delirium. When patients were investigated for anesthesia technique, no difference was reported between general and regional anesthesia in terms of delirium during the studies with elective operations. The best treatment of delirium is to take preventive precautions. A decrease of 6.1% was detected in absolute risk of delirium with preventive precautions among geriatric patients. The medication that should be chosen for hyperactive delirium is haloperidol. Delirium increases mortality and the length of hospital stay. Increasing the awareness of healthcare providers and the implementation of suitable treatment methods in this regard provides great benefits for patients as well as having economical advantages.

Key words: geriatric patient, postoperative delirium

intensive efforts. Its diagnostic criteria given in the DSM V under the chapter diagnostic criteria for delirium [Table 1]. The most commonly used tests for the diagnosis of delirium are Confusion Assessment Method (CAM), Mini-mental state test and Organic Brain Syndrome Scale. Each of them has advantages and disadvantages accordingly. CAM is a method that can be applied quickly and precisely by non-psychiatrist clinicians and even nurses at the bedside. The sensitivity of CAM is between 94-100% and its specificity is 90-95% [5]. CAM has also been adapted as CAM-ICU for the intensive care patients which can be administered during ventilation. Also Leutz et al [6]. have reported in their study that CAM-ICU was the most reliable test among the others. Mini-mental state test is very easy and can be applied in a short time. The values below twenty four show severe cognitive impairment. Delirium may also develop over underlying dementia. Dementia can be differentiated from delirium by its clinical features.

Table 1. Diagnostic criteria for delirium (DSM V).

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnostic criteria for delirium is as follows:
<ul style="list-style-type: none"> • Disturbance in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and awareness. • Change in cognition (e.g., memory deficit, disorientation, language disturbance, perceptual disturbance) that is not better accounted for by a preexisting, established, or evolving dementia. • The disturbance develops over a short period (usually hours to days) and tends to fluctuate during the course of the day. • There is evidence from the history, physical examination, or laboratory findings that the disturbance is caused by a direct physiologic consequence of a general medical condition, an intoxicating substance, medication use, or more than one cause.

CAM does not show the severity of delirium. The most commonly used method to measure its severity is the Delirium Rating Scale.

Pathophysiology of Delirium

The mechanism of delirium has not been fully understood yet. It is thought that different pathophysiological mechanisms have effects in different conditions. The current hypothesis is a combination of an increase in dopaminergic activity and a decrease in cholinergic and GABAergic activity [7]. Since cholinergic and GABAergic tonus decrease by age, it is not surprising that the incidence of delirium is seen much more among geriatric patients. Additionally, oxidative stress and neuronal damage associated with inflammation might be the other factors.

Risk Factors for Delirium

There are many risk factors for the development of postoperative delirium. Inouye [8] classifies these risk factors as predisposing and precipitating. Age is considered as one of the predisposing factors as the physiological reserve of geriatric patients decrease. The other factors are low level of education, impaired cognitive functions, hearing problems, malnutrition and depression. Although dementia is known as one of the most important risk factors of postoperative delirium, there are no reports on the preventive effects of medication used in dementia treatment on delirium [9]. No positive results could be obtained from the studies performed with donepezil and rivastigmine in this regard [10, 11]. Considering precipitating factors, the type of the surgery gains importance. As the level of surgical stress increases, the incidence of postoperative delirium also increases. Orthopedic, vascular and cardiac surgeries are the most common causes. While the risk after cataract surgery is 4%, this risk increases up to 36% after vascular surgery [12].

Pain control is an important part of treatment during the postoperative period. However, pain control is difficult in geriatric patients since they cannot fully express their pain and their pain threshold is increased; and this may lead to delirium [13]. The high resting pain scores within the first three days were found to be associated with postoperative delirium in patients who had undergone surgery other than cardiac surgery [14]. Undiagnosed urinary retention during the postoperative period may also trigger delirium due to pain. Morrison et al [15] reported in their study that the probability of developing delirium is increased 9 times in patients with a hip fracture whose pain could not be sufficiently controlled. Despite the fact that opioids are powerful analgesics, their side effects in geriatric people are more significant. It is known that meperidine causes delirium and it should not be preferred in pain treatment [16]. When the effects of opioids on delirium were examined according to their routes of administration, it was reported that there was no difference between intravenous and epidural route; however oral route was shown to have a lower risk when compared to the intravenous route [17, 18]. It was also reported that sedative and analgesic medication were iatrogenic risk factors for delirium in intensive care patients [19]. The suitable sedative agent for patients in the intensive care unit is dexmedetomidine because there are some reports that have shown it to decrease delirium in these patients [20].

In addition, polypharmacy should be avoided since the different types of medication can interact with each other and may have effects on the central nervous system. Moreover, the general consensus is to avoid using anticholinergic medicine that has more central effects [9]. Alcohol addiction is also an important risk factor for postoperative delirium. Patients should also be questioned for this aspect during the preoperative period. This evaluation

provides early recognition of alcohol withdrawal symptoms and enables the physician to pay more attention to patients with a high risk of delirium during the postoperative period [9].

Another debate is the relationship between delirium and the route of anesthesia administered. Although no difference was reported between general and regional anesthesia for delirium in the studies performed with elective operations, delirium was observed 2 times less in patients who underwent regional anesthesia for immediate hip fracture when compared to general anesthesia [21]. In addition to this, no relationship was found between intraoperative hemodynamic values and delirium [22].

Treatment of Delirium

The best treatment for delirium is preventive precautions. Inouye et al [8] detected a decrease of 6.1% in delirium among the geriatric patients to whom care was given by taking precautions against several risk factors (cognitive impairment, sleeping disorders, immobility, dehydration, vision and hearing problems) compared to normal care. Anesthesiologists also take care of these risk factors. Vital findings such as oxygen saturation and blood pressure should be optimized during the preoperative period. Glycemic control should be maintained; and electrolyte disturbances and hemoglobin decreases should

be treated. Geriatric consultation should certainly be requested. The awareness of the patient with their surroundings should be increased during the postoperative period with the use of objects such as glasses and hearing aids, etc. sufficient pain control and early mobilization should be provided, urinary catheters should be withdrawn as early as possible.

Haloperidol is the drug of choice for hyperactive delirium. The reason for choosing this medicine is that it has minimal anticholinergic side effects and has no active metabolites. Recommended dose for geriatric patients is 0.25-0.5 mg every 4 hours, when necessary [23]. Benzodiazepines are not used in the treatment unless the cause of delirium is alcohol or benzodiazepine withdrawal.

In conclusion, postoperative delirium is a condition that is frequently seen among the geriatric population. It may not be recognized despite the effective diagnostic methods. Several risk factors may cause delirium; and preventing the patient from these predisposing risk factors as much as possible is very important. Main therapy is to treat the underlying causes and use antipsychotics in case of agitation. Delirium increases the mortality and the duration of hospital stay. Increasing the awareness of healthcare providers and the implementation of suitable treatment methods in this regard provide great benefits for patients as well as having economical advantages.

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