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POST OPERATIVE DELIRIUM IN ELDERLY PATIENTS UNDERGOING HIP SURGERY: DIAZEPAM VERSUS HALOPERIDOL

Mittal B. Dave *, Urmi M. Dave, Ravikiran S. Lagali and Kashyap V. Ramoliya

PDU Medical College, Civil Hospital, Jamnagar Road, Rajkot, Gujarat, India.

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Correspondence to Author:
Dr. Mittal B Dave
(M.S., Orthopaedics)

Assistant Professor,
Department of Orthopaedics,
3rd Floor, Trauma Center,
Civil Hospital, Jamnagar Road,
Rajkot – 360002, Gujarat, India.

E-mail: mittaldave@yahoo.com

ABSTRACT: Post-operative delirium is transient global disorder showing reduced cognition, altered consciousness and psychomotor activity as well as deranged sleep-wake cycle. For elderly patients undergoing hip surgery, the reported incidence varies from 16% to 62% with average rate of 35%. Pharmacotherapy management of post-operative delirium may entail use of drugs belonging to groups like sedatives, antipsychotics, analgesics and others. The aim of this study was to assess the efficacy and safety of diazepam compared to haloperidol in post-operative delirium. A retrospective analysis of all elderly (>65 years) undergoing hip surgery in our department between 2014 to 2016 was done to identify patients developing post-operative delirium and those treated with Diazepam or with Haloperidol were divided in separate groups. We compared these groups for parameters like duration of postoperative hospital stay, duration of delirium, number of patients showing complications and adverse events. Total 506 patients meeting inclusion criteria were identified. Of these, 188 patients were found to have been diagnosed with post-operative delirium. 55 patients were treated with diazepam (Group A) while 73 patients were treated with haloperidol (Group B). There was no statistically significant difference between the groups regarding post-operative hospital stay or duration of delirium. Diazepam group however showed a significantly higher complication rate (20% vs 6.84%). The incidence of side effects was similar in both the groups. Haloperidol appears to be better tolerated and safer in treatment of post-operative delirium. Diazepam has limited role in treatment of post-operative delrium and should be used cautiously.

INTRODUCTION: Delirium in post-operative period can be divided into emergence delirium (seen mainly after general anaesthesia in the operation theater or recovery room) or post-operative delirium (seen 24-72 hours post operatively). [1] Post-operative delirium is more likely to result in complete recovery than other forms of delirum. [2]

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Post-operative delirium is transient global disorder showing reduced cognition, altered consciousness and psychomotor activity as well as deranged sleep-wake cycle. In 20-30% of patients delirium is followed by death. [3] There is wide variation in reported rates of post-operative delirium. For elderly patients undergoing hip surgery, the reported incidence varies from 16% to 62% [4-6] with average rate of 35%.[7] Occurrence of post-operative delirium is associated with higher risk of peri-operative complications like pulling out of intravenous lines, catheters, drains and dressings. It is also associated with longer hospital stay and increased chances of pneumonia, decubitus ulcer, deep vein thrombosis etc.

Although the exact cause of post-operative delirium is not known, there are multiple preoperative predisposing factors such as age, sex, preoperative cognition level, number of drugs being taken pre-operatively, number of blood transfusions, pre-operative hearing or visual impairment, peri-operative hypoxia, uncontrolled pain, use of physical restraints etc. [3]

Post-operative delirium is associated with increased morbidity (including risk of injury), mortality, duration of hospital stay, increased nursing costs. [8] Patients who develop delirium during their hospitalization have a higher six month mortality when compared to those who do not show post-operative delirium. [9]

Prevention and management of post-operative delirium is multimodal and requires multidisciplinary approach. As far as pharmacotherapy is concerned, management of post-operative delirium may entail use of drugs belonging to varied groups like sedatives, antipsychotics, analgesics and others. Patients suffering from hyperactive delirium are often prescribed benzodiazepine sedatives like diazepam. They are also treated with antipsychotic drugs like haloperidol.

The aim of this study was to assess the efficacy and safety of diazepam compared to haloperidol in elderly patients undergoing hip surgeries and developing post-operative delirium.

MATERIALS AND METHODS: A retrospective analysis of all elderly (>65 years) undergoing hip surgery in our department between January 2014 to December 2016 was done to identify patients developing post-operative delirium. We divided patients diagnosed with post-operative delirium into those receiving Diazepam (Group A) and those receiving Haloperidol (Group B). We compared these groups for parameters like duration of postoperative hospital stay, duration of delirium, number of patients showing complications and adverse events.

Duration of delirium was determined from the last psychiatry consult documenting major improvement in Mini Mental State Examination. Complications looked for were need for mechanical ventilation, occurrence of deep vein thrombosis, aspiration pneumonia and death. Side effects or adverse events searched for were nausea and vomiting, respiratory depression (determined by falling SPO2 and need for oxygen support), diarrhea, itching.

Statistical methods used were two tailed Student t test for continuous data and Z test for comparing incidence rates.

RESULTS: Total 506 patients aged >65 years undergoing hip surgery between 2014 and 2016 at our institute were identified. Of these, 188 patients were found to have been diagnosed with post-operative delirium. 55 patients were treated with diazepam (Group A) while 73 patients were treated with haloperidol (Group B) and 60 patients were treated with other drugs.

Average duration of post-operative stay in Diazepam group was 8.32 ± 2.03 days while that in Haloperidol group was 6.2 ± 1.73 days. Using Student t test, the p value was 0.89 and hence there was no statistically significant difference between the two groups in terms of post-operative hospital stay.

Average duration of delirium state was 1.6 ± 1.02 days in Diazepam group while it was 1.8 ± 0.82 in Haloperidol group. Comparing both the groups, p value was 0.95, again showing no statistically significant difference between the groups. The delirium state lasted for similar duration in both the groups.

The number of patients showing complications was 11 (20%) in Diazepam group (3 patients required mechanical ventilatory support, 5 patients showed evidence of aspiration pneumonia, 1 patient had evidence of deep vein thrombosis and 7 deaths reported from this group, sub groups being not mutually exclusive and some patients reporting more than one complications).

Total number of patients showing complications in Haloperidol group was 5 (6.84%) (1 patient showing evidence of aspiration pneumonia, 3 deaths, 1 patient had evidence of deep vein thrombosis). On comparing the incidence of complication rates between the two groups, the Z score was 2.27, p value 0.02, significant at $p<0.05$ but not at $p<0.01$.

Diazepam group had an increased rate of complications when used to treat post operative psychosis.

Total number of patients showing adverse events in Diazepam group was 8 (14.54%) (2 patients with nausea/ vomiting, 6 patients requiring 02 support following Diazepam administration). Number of patients showing adverse events in Haloperidol group was 7 (9.58%) (4 patients with nausea/ vomiting, 2 patients needing O2 support, 1 patient had itching). Comparing the incidence rate of adverse events amongst both groups, Z score was 0.86, p value 0.38. There was no significant difference between the groups as regards to the incidence of adverse events.

TABLE 1: RESULTS

	Group A (Diazepam)	Group B (Haloperidol)	p Value
Duration of post op Hospitalization (Days)	8.32 ± 2.03	6.2 ± 1.73	0.89
Duration of Delirium (Days)	1.6 ± 1.02	1.8 ± 0.82	0.95
Complication Rate	20%(11/55)	6.84%(5/73)	0.02
Adverse Event Rate	14.54%(8/55)	9.58%(4/73)	0.38

DISCUSSION: Incidence rate of post-operative delirium in elderly patients undergoing hip surgery was 37.15% in our study which is comparable to rates published by other researchers. [4-7] Haloperidol did not reduce the duration of post-operative delirium or duration of post-operative hospitalization when compared to group treated with Diazepam. Similar results have been reported by others. [10] However there was significantly higher complication rate in Diazepam group. Haloperidol appears to be better tolerated and safer in treatment of post-operative delirium. Diazepam has limited role in treatment of post-operative delrium and should be used cautiously, particularly only when alcohol withdrawal or delirium tremens is also associated in post-operative period. [11]

CONCLUSION: Post-operative delirium in elderly patients undergoing hip surgery is very common and can be associated with considerable morbidity and mortality. Haloperidol is superior to benzodiazepines and safer when compared to Diazepam.

CONFLICTS OF INTEREST: Authors have no conflicts of interest to declare.

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