Precedex and Propofol on Emergence Delirium

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AIM

Emergence delirium is a postoperative complication that may occur in patients who undergo sedation/general anesthesia. A literature review was conducted to demonstrate the difference, if any, of precedex and propofol on emergence delirium.

INTRODUCTION

Emergence delirium (ED) can be described as an acute confusion state during recovery from anesthesia; patients with ED may present with disorientation, hallucination, restlessness, and purposeless hyperactive physical behavior [1.] Although the cause of emergence delirium remains unknown, it can have significant consequences and complications to the patient and staff members. Patients in this state are at risk for injury, self-extubation, hemorrhages and prolonged hospitalization [2]. Certain risk factors, such as age, sex, medical history, duration of surgery/anesthesia and so forth, should be taken into consideration when choosing the appropriate sedative [1]. There is currently no clear method regarding the treatment of emergence delirium however, precedex and propofol have been shown to be effective in managing ED.

Propofol is known to be a rapid-onset, short acting sedative and hypnotic agent that is generally used for anesthesia induction and maintenance [3].In pediatric patients, propofol is the preferred drug to prevent and treat ED however, its effect and timing of administration plays a huge factor in its impact [1].

Precedex is a highly selective alpha-2-adrenoreceptor agonist that has sedative/analgesic properties and has been found to be an effective drug choice for managing/preventing ED [1]. It has also been reported to significantly reduce post operative agitation (ED) in adult or pediatric patients [3].

As more and more patients are undergoing sedation and/or general anesthesia, it is important to consider what sedative works best in managing emergence delirium. Due to the lack of research and clinical studies on how to manage ED, the authors conducted a literature review to examine the differences of precedex and propofol on emergence delirium.

MATERIALS & METHODS

This paper reviewed precedex and propofol literature on emergence delirium from 2019 to 2023. Literature search was conducted electronically using MEDLINE/PubMed database. MeSH terms included the following: "Propofol", "precedex"," emergence delirium" and "anesthesia".

Inclusion criteria: Clinical trials, human subjects, case report, articles written in English, randomized controlled trials, retrospective reviews and electronic chart reviews.

Exclusion criteria: Non-human subjects, retrospective reviews not involving sedation or anesthesia, and research that primary focused on propofol and precedex.

RESULTS: Findings of Reviewed Sources

AUTHOR	PURPOSE	STUDY TYPE	SIGNIFICANT FINDINGS
[a] Hyun-jung Shin, M.D.,Ph.D.;et al.	Compared post operative delirium after precedex vs propofol sedation in adults who had lower limb surgery with spinal anesthesia (732 adult patients)	Randomized double-blind study	Precedex demonstrated lower incidence of emergence delirium compared to propofol in adults who received lower extremity surgery
[b] Xuemin Han; et al.	The efficacy of precedex vs propofol in the treatment of ED on pediatric patients who were under general anesthesia (53 pediatric patients)	Randomized double-blind study	Precedex was shown to be more effective than propofol in treating pediatric emergence delirium and had a lower incidence
[c] Lili Huang, MD; et al.	Comparison of precedex and propofol on emergence delirium in children who had cleft palate surgery with sevoflurane-based anesthesia (86 pediatric patients)	Clinical study	Precdex showed lowered incidence of ED compared to propofol
[d] Yuquan Rao; et al.	The effect of precedex on ED following anesthesia compared to placebo and other sedatives (7,714 patients)	Meta-analysis/Systemic review	Compared with placebo, midazolam, and opioids, precedex decreased ED significantly, however it did not show superiority compared with propofol
[e]Zhaoyan Feng; et al.	Compared the effects between precedex and propofol on relieving emergence agitation after general anesthesia (120 adult patients)	Randomized controlled trial (RCT)	Precedex showed lower incidence in ED
[f] Yin-Xiao Chen; et al.	To analyze the effect of precedex in femoral shaft fracture surgery (52 pediatric patients)	Clinical study	Patients split into 2 groups. Both groups were given propofol combined with remifentanil, while the second group was given precedex after induction of anesthesia [experimental group]. The experimental group showed lower incidence of ED .
[g] shwethashri K.R; et al	Analyzed the effectiveness of 3 regimens of sedation for children undergoing MRI	Clinical study	ED scores were significantly low in the group where precedex and propofol were combined, as compared to the groups where either agent was used alone
[h] Yu Cui; et al.	Analyzed several agents and their effects on preventing ED (5991 patients)	Network Meta-analysis	Suggests that precedex is the most effective agent to reduce ED compared to other agents (propofol, ketamine, midazolam, etc)
[i] Yong Tang; et al.	Compared precedex and propofol as sedatives for kids undergoing MRi	Meta analysis of RCT's	Propofol demonstrated a lower incidence of ED compared to precedex

DISCUSSION

This literature review identified 9 papers that met inclusion criteria; 748 patients were in a double-blinded, randomized controlled study, aged 65 and older, with 732 patients in the final sample. One clinical study involving 150 children identified regimen with propofol bolus and precedex infusion had better findings on reducing post operative delirium as compared to the use of either agent alone. One meta analysis literature demonstrated that the time in applying agent does make a difference in reducing the incidence of emergence delirium. Another study involving children undergoing cleft palate surgery suggests that precedex is superior to propofol in lowering ED.
Both sedatives were shown to reduce the incidence of emergence delirium, however, precedex demonstrated a much lower incidence of emergence delirium when compared to propofol [a, b, c, d, e, f, , h].Despite the fact that precedex was shown to be more effective in managing delirium, certain adverse effects are to be considered when deciding what sedative to administer such as, the amount of time it took for patient to recover, oxygen desaturation, brady cardia and respiratory depression [a, b, c, d, e, f, g, h, i]. For instance, hypotension and bradycardia were a side effect caused by precedex, while oxygen desaturation due to respiratory depression. was a common side effect when administering propofol [a, b, c, d, e, f, g, h, i].

CONCLUSIONS

This literature suggests that the use of precedex was found to be more effective in reducing emergence delirium compared to propofol. Despite its superiority, clinical practitioners must still consider the pros and cons prior to choosing a sedative agent.

REFERENCES

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