

Persistent Agitation Following General Anaesthesia and Surgery in Paediatric Patients: Prevalence and Contributing Factors

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Abstract

Introduction: It is usually short-lived but causes tone-injury during agitation and it led to maternal anxiety. This study was aimed to assess prevalence and factors associated with emergence agitation after general anesthesia and surgery among pediatric cases at University of Gondar technical sanitarium.

Methods: A prospective follow-up study conducted on 153 pediatric cases progressed 2 – 9 times who were operated from first February to April 30, 2019. Descriptive statistics performed to determine the prevalence. To identify the associated factors multi-variable double logistic regression was held, and a p-value 0.05 was considered as significant.

Results: Emergence agitation was endured on eighty (52.3) children with a mean and standard deviation of 12 ± 5.9 min of duration. Among agitated children, 8(10) of them developed adverse events related to agitation. Delicate maternal separation gesture (AOR = 2.688, 95 CI = 1.131 – 6.39), children progressed 2 – 5 times (AOR = 2.688, 95 CI = 1.131 – 6.3925), isoflurane conservation (AOR = 4.001, 95 CI = 1.733 – 9.234) and propofol administration after conservation check (AOR = 0.145, 95 CI = 0.030 – 0.695) were significantly associated with agitation.

Conclusions: Being a preschool child, delicate maternal separation and isoflurane conservation were associated with emergence agitation. But protocol administration after conservation check was set up to be defensive. So, agitation should be assessed and detected in the postoperative period and sweats should apply to help emergence agitation. [1].

Keywords: Emergence agitation; Pediatric; General anesthesia; Surgery; Prevalence; Associated factor

Introduction

Emergence agitation (EA) is characterized by periodic and generally short-lived restlessness, crying, disorientation, confusion, and cognitive changes. EA is one of the significant post-anesthetic and surgery-related complications, which occurs during the recovery period in the early phase of general anesthesia (GA).

Emergence from GA is associated with different marvels; postoperative nausea and vomiting, respiratory complications (airway inhibition, post-intubation stridor, pulmonary edema) which can lead to hypoxia, shivering, urinary retention and different behavioural characters like restlessness, crying and agitation which is more constantly do in children.

Although emergence agitation was first reported in around 1960 the prepping cause is still not understood well and different attempts have been made to drop its prevalence. EA has been linked as a significant problem in children at the post-anesthetic care unit which has a variable prevalence ranging from 10 to 80.

Despite utmost of the pediatric surgical cases passed less invasive surgical procedures and anesthesia ways in recent times, there are reports of lesser prevalence indeed in children without pain encouragement or with no surgical procedure.

The factors which dispose children to EA include delicate maternal separation, catheters (intravenous, drain, urinary), type of surgical procedure, rapid-fire recovery in a strange terrain, surgical and anesthesia time duration, hypoxemia, and airway inhibition.

The type of anesthesia and the medicines used in the premedication, induction, or conservation phase and pain are considered to be associated with EA in pediatric cases. Cases maintained with recent

unpredictable agents are at increased threat of developing EA than other unpredictable agents and intravenous anesthetic agents.

Regarding the opinion of EA in pediatrics, there were difficulties whether to use the adult individual tool but currently, utmost clinicians use a veritably sensitive and specific validated pediatric anesthesia emergence distraction scale (PAEDS) which incorporates cognitive and agitation assessment.

Indeed though EA is a frequent complication that had several negative and injurious consequences less attention has been paid to it and not delved at the country-position besides it's largely current in abroad countries [2-3].

Material and Methods

Study design, sample size, and selection of cases

A prospective follow-up study was conducted to assess the prevalence of emergence agitation and to identify the contributing factors on pediatric cases progressed 2 – 9 times who were operated under general anesthesia at University of Gondar comprehensive

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technical Sanitarium (UOGCSH) operation apartments.

The study was conducted at UOGCSH which is located about 738 km, northwest from the capital megacity of Ethiopia and about 180 km from, the capital megacity of Amhara indigenous state. The study was conducted from first February 2019 to April 30, 2019, at UOGCSH operation apartments in the central Gondar Zone, Northwest Ethiopia. In the study area, pediatric cases have surgery in the main operation which has 4 operation apartments and in the ophthalmic operation room.

All pediatric cases that were operated under general anesthesia during the study period were included. Children having diagnosed natural anomaly and experimental detention history of febrile illness and children who had surgery involving both eyes were barred from the study.

The sample size was determined using a single population proportion formula by taking a 50 population proportion and a 5 degree of delicacy with a 95 confidence interval. From the operation list paper on both operation apartments (ophthalmic and main operation apartments), 216 cases were operated within three months. The final sample size including a 10non-response rate was 153 [4-5].

Successive cases were used for the collection of data for the included pediatric cases that were operated at different operation apartments of UOGCSH until the sample size number was achieved during the study period.

Surgical affiliated type of surgery, urgency, duration of surgery, and postoperative pain.

Written and verbal concurrence was taken from each study party parents or attendants, after a brief explanation and full exposure of the benefit and threat, they got from participation.

The treatment of their children and other advantages they could receive from the study were also assured to them, as well as their full right to refuse and withdraw from it. Sanitarium couldn't be told by their children's participation in the study. Confidentiality was assured by removing identifiers at all situations of the study. Data was collected using a structured questionnaire. Most of the questions in the survey were written in English. To insure quality of the questionnaire, a retest was done on 5 of cases who weren't included in the main study. Also necessary corrections were made to the questionnaire for the main study. Data collectors were handed acceptable information regarding assessment tools. The socio- demographic status of the child including separation geste was collected before the case entered the operation room on the day of surgery. In the emergence phase of anesthesia, the data collectors used a short scale of PAEDS which has 5 particulars used to diagnose whether the case develops EA, all cases were followed from the time of extubation for 30 min in the recovery apartments. The questionnaires also composed a valid tool of FLACC score of pain parameter and other particulars that can address study variables. The agitation score was recorded every 5 nanosecond and when the case was developed EA the data collectors follow the duration of agitation and recorded any adverse events related to agitation. The data collectors were trained to tell the responsible health professional when the case had developed EA [6-7].

Discussion

This study was aimed to assess the prevalence and factors associated with emergence agitation after general anesthesia on 153 pediatric cases progressed 2 – 9 times old. In the postoperative phase, especially when

children are under anaesthesia, EA agitation is a big worry. Utmost experimenters have used a five- point scale, Cravero and Watcha scale before the discovery of the PAED scale which had a variation on the prevalence of EA. Other investigators were used crying for three to five twinkles as EA, while others used thrashing geste

Which demanded restraint as EA? Another distinction in the prevalence was on the cut value of the PAED scale in some studies they used 10 as a cut value to diagnose EA but lesser than 12 is valid and dependable. Regarding the duration of EA, our disquisition had a longer duration (mean duration = 12.9 ±5.9) but investigators report showed there was a shorter duration of EA. The possible explanation might be there could be missing peak prevalence when cases were examined with a longer gap of time. But our cases were followed privately every 5min. Regarding the duration of anesthesia and surgery, a study done in Iran reported that duration of surgery lower than an hour had an advanced prevalence of EA, in this study also the major prevalence of EA passed in surgical procedures less than an hour (42.7) [8-9]. But this is due to, the current study utmost of the pediatric surgical procedures are lower than an hour so that the maturity of cases develop the outgrowth variable. After the administration of dexamethasone 30 min before induction, the prevalence of EA was 60 in a study done. But in our study, the prevalence after dexamethasone premedication was 48.7 the variation was due to their cases were only had adenotonsillectomy procedure which is anticipated to have a advanced prevalence of EA and our cases who entered this medicine had no specified time. A study done in the Republic of Korea revealed LMA operation and its junking in a deep state of anesthesia had a lower prevalence of agitation (21.1) compared with ETT (41.1), but in the current, the prevalence after LMA operation and deep extubation is 46.7 while after ETT operation is 52.9, this might be utmost of our cases passed ophthalmic procedure where further operation of LMA applied and advanced prevalence of EA was among this group of cases. [10].

Conclusion

In this study, the overall prevalence of EA on pediatric cases progressed 2 – 9 times witnessing different surgical procedures was 52.3. The factors associated with the circumstance of EA were the preschool age group of children (2 – 5 times), delicate maternal separation geste, and isoflurane conservation, but propofol administration near the end of surgery after conservation inhalation agent check set up to drop the prevalence of EA. We recommend assessing and detecting EA in the postoperative period and sweats should apply to calm and cooperate pediatric cases that'll be ready to have surgery. For parlous pediatric cases, unless contra- indicated administer propofol near the end of surgery after closing the conservation agent.

Conflicts of interest

The authors declared that there's no conflict of interest.

Acknowledgment

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