ORIGINAL ARTICLE

Reduction of Postanesthetic Pediatric Distress: A Coordinated Approach

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Purpose: *Preoperative anxiety in children is associated with postoperative distress in recovery. Both are predictors of long-term maladaptive behavior. Remedies have been suggested to modify individual risk factors, but overall strategy is lacking.*
Design: *An approach to anxiety reduction coordinated throughout the hospital experience has been developed in our day-stay pediatric surgical unit.*
Methods: *There is a preadmission familiarization visit. On admission, time is spent in a playroom with other children. Anxiety is recorded using the modified Yale Preoperative Anxiety Scale. Children are distracted with an activity book during propofol induction. They are allowed to wake naturally, and emergence state is scored.*
Finding: *The incidence of emergence distress is low in our study. Of 68 children, only one exhibited emergence delirium and three had inconsolable crying.*
Conclusions: *Important elements in reducing emergence distress are preadmission visit, use of a playroom, effective analgesia, anesthetic maintenance without short-acting volatiles, and undisturbed recovery with a parent present for reassurance.*

Keywords: *anxiety, children, play, preoperative care, recovery room.*
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AGITATION IN CHILDREN waking from an anesthetic is reported in a review by Silva et al[1] as having an incidence of between 10% and 67%. Dahmani et al[2] reported the incidence as between 2% and 80%. These results depend partly on the definitions used, but also on risk factors involved in the trials assessed. The main factor affecting emergence agitation is preoperative anxiety. This is particularly relevant in the anesthetic room at induction as it relates directly to the emotional state on waking in the recovery room (postanesthesia care unit).[3] The level of anxiety is to some extent a function of the child's age (2 to 5 year olds are significantly at risk)[4] and also personality. A less social, less adaptive, and more emotional temperament predisposes to ready anxiety in unfamiliar environments or if separated from mother. However, parental anxiety, even if not overtly expressed, can adversely influence a sensitive child.[5]

Head and neck surgery seems also to be predictive of risk.[6] In addition, it has been found that rapid emergence from anesthesia, usually because of either pain, use of a short-acting volatile inhalational agent, or simply disturbance while still

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Conflict of interest: None to report.

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under the influence of the anesthetic is a significant risk factor.[7] A Cochrane review found that compared with sevoflurane, certain other anesthetic agents offered reduced risk of emergence agitation.[8]

The most dramatic evidence of distress on awakening is termed emergence delirium. This is a dissociated state of consciousness in which the child is irrational, incoherent, uncooperative, crying, kicking, and thrashing.[9] Lesser degrees of distress are inconsolable, agitated crying that settles only when reunited with mother, if then, or simple, nonagitated crying from which the child is consolable with a cuddle from the recovery nurse. Emergence delirium has a strong relationship with longer-term negative behavioral changes, simple crying much less so.[3]

In the Children's Elective Care Unit of our UK hospital, we have over several years developed a coordinated approach to children's admission, anesthesia, and recovery, taking account of the known risk factors. The purpose of this study, therefore, was to evaluate the incidence of emergence distress in a surgical day care setting with a comprehensive, coordinated preoperative program aimed to alleviate anxiety.

Instruments

The modified Yale Preoperative Anxiety Scale (mYPAS) has been validated for pediatric assessment in the anesthetic room.[10] This records the level of anxiety shown through five easily observable behaviors: activity, vocalization, expression of emotion, state of arousal, and interaction. The minimum score (least anxious) is 5, and the maximum score is 22. The risk of postanesthetic sequelae is increased by 10% for each increment of 10 points on the score.[3] This was assessed by the anesthetist before induction.

Bajwa et al[11] found the Watcha scale for the assessment of emergence delirium in children to be simple to use in clinical practice. Although not validated, it exhibits good sensitivity and specificity. It scores five progressively disturbed behaviors in the 5 minutes after initial wakening from anesthesia: 0, sleeping; 1, calm; 2, simple, consolable crying; 3, agitated, inconsolable crying; and finally, 4, incoherent, agitated, and thrashing, which equates to emergence delirium. A score on this scale was recorded by the recovery nurse for each child awakening in the recovery room.

A single page questionnaire (Appendix A) was designed for completion in part by the anesthetist and part by the recovery nurse. It had sections for patient demographics including preoperative preparation; anesthetic details including analgesia and inhalational agents; recovery observations including a Watcha score; and additional risk factors including the mYPAS score.

Method

For this prospective observational study, the details of every pediatric (ages, 1 to 15) anesthetic given in the day surgery unit of a UK general hospital by the first author (SH) over a period of 3 months (March to May 2014) were recorded. There were no exclusions. Approval for the study was given by Colchester University Hospital audit office.

Pediatric patients are invited for a preadmission visit at a quiet time on the children's ward to meet the ward staff and hospital play specialist and see where they will have a bed for their operation. Children are grouped for their visit according to the day of admission and type of operation. They watch a video of the anesthetist and surgeon explaining the activity in the anesthetic room and the nurses showing them round the recovery room. This gives them a chance to make friends with other children who will be on the ward on their day of operation.[12]

Children and their parents are asked to arrive at least one and a half hours before the start of the operating list so there is time for them to become acclimatized to the ward environment, go through a standard admission procedure with a ward nurse, and have a preoperative assessment from anesthetist and surgeon. To provide postoperative pain relief, oral analgesic suspension, usually ibuprofen at 10 mg per kg or, if the child has a history of sensitivity to this, paracetamol, is given an hour before surgery. At least half an hour before surgery, local anesthetic cream is applied to the back of both hands.

The children are then free to play together, guided by the play nurse, with toys and video games as an

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