

# Preoperative anxiety in pediatric age group-a brief communication

## Abstract

Preoperative anxiety is a major and under reported problem in children. A child cannot express the degree of anxiety to their parents or medical care providers. Anxiety from parents can also transmit to their children. Persistence of anxiety in preoperative period results in poor perioperative outcome. Anesthetists should be able to play a major role in identifying and managing the preoperative anxiety in children.

**Keywords:** preoperative anxiety, modified Yale preoperative anxiety scale, state trait anxiety inventory for children, pediatric age group

Volume 8 Issue 5 - 2017

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**Received:** June 18, 2017 | **Published:** September 20, 2017

## Introduction

Preoperative anxiety (PA) in children is a large problem in anaesthesia and critical care. Most of the time only the tip of the iceberg is managed by anesthetist due to low expression by children and lack of any established method of assessment. Parents also cannot fully judge the anxiety of children and report to the doctor. On the other hand parents, too, develop anxiety before the surgery, which may transmit to their children. High levels of PA produces delay in induction time, tachycardia, hypertension, more consumption of anesthetics, longer ICU and hospital stay, poor outcome and postoperative behavioural changes.<sup>1</sup> Many medical staff, parents and pediatric patients, themselves, strongly desires a better understanding of how to successfully promote a calm and pleasant preoperative experience to their child.<sup>2</sup> The incidence, risk factors, side effects, assessment methods and steps to manage PA is discussed below.

## Risk factors

The incidence of PA is reported to be 60-65% in children. The risk factors are; excessive parental anxiety,<sup>3</sup> high operative pain, unfamiliar hospital environment, uncertainty about the outcome from the intervention, redo-surgery, parental detachment, stranger anxiety, previous unpleasant experience from hospital and children age above 7yr. Parents having low coping and less self-efficacy carry high PA in infants and toddler.<sup>4</sup>

## Problems of preoperative anxiety

Children express preoperative anxiety in the form of excessive crying, agitation, worriness, cessation of play and probable vocalizing of their fear. These stressful situations lead to an increase in heart rate, sweating and sympathetic response.<sup>3</sup> The cons are longer induction time, delayed recovery, more postoperative pain, longer hospital stay and high cost, high level of stress hormones and inflammatory markers, postoperative behavioural changes and high anxiety in subsequent surgery.

## Anxiety assessment

Many psychological tests have been tested to assess and estimate the degree of anxiety in adults. Few tests have been conducted amongst children. Modified Yale Preoperative Anxiety Scale (m-YPAS); was used to assess the behavior of a child in the preoperative area and the

operation room. It is a set of behavioral checklist developed by Kain et al.,<sup>5</sup> to measure the state anxiety of young children.<sup>5</sup> It contains 22 items in 5 categories: activity, emotional expressivity, state of arousal, vocalization, and use of parents. Each category receives a score on a scale of 0 to 4 (6 for vocalization) according to the behavior of the patient. This scale has well to excellent reliability and validity for measuring children's anxiety in the preoperative holding area and during induction of anesthesia. Recently Children's Perioperative Multidimensional Anxiety Scale (CPMAS) is developed by Chow et al.<sup>6</sup> It is a visual analog scale composed of 5 items, each of which is scored from 0-100. CPMAS is an age appropriate self-reporting scale which was validated recently to measure in busy hospital settings. State trait anxiety inventory for children: It is the gold standard test for assessing anxiety. The State-Trait Anxiety Inventory for Children (STAI-CH) differentiates between general tendency to anxious behaviour rooted in the personality and anxiety as a fleeting emotional state.<sup>7</sup> The test is designed to be used with primary or junior high school children and consists of two 20 item scales. The items are easy to read and can be administered verbally to children.

**Laboratory parameters:** preoperative anxiety activates the human stress response, leading to increased serum cortisol, epinephrine, and natural killer cell activity.<sup>8</sup>

## Management

**Non-pharmacological:** Presence of one of the parents during the induction of anesthesia reduces anxiety in children significantly.<sup>9</sup> Presence of clowns during the induction of anesthesia was an effective intervention for managing a child's anxiety during the preoperative period.<sup>10</sup> Hand-held video games reduce anxiety by distraction in a pleasurable and familiar activity, probably through cognitive and motor absorption. Music therapy and interactive games help in parental separation and entering operating room. Development of familiarity with children is essential by serial interaction and friendly involvement. Parental anxiety and stress are to be reduced effectively; so that it will reduce the reflection on children by proper education and counseling.

**Pharmacological intervention:** premedication with sedatives such as midazolam, dexmedetomidine, clonidine, ketamine and glycopyrolate combination, melatonin and fentanyl etc. are useful to produce mild sedation, reduce anxiety and help child separation from parents.

## Conclusion

Preoperative anxiety is a piece of the larger problem associated with medical environments in children. Assessment and detection of anxiety is an important part of pre-anesthesia visit and checkups. The various risk factors have to be minimized and treated. The use of toys, games, video and cartoons to keep the child engaged during preoperative period; relieving the anxiety of parents by education and counselling; and use of premedication are effective in attenuating the anxiety and will provide a better outcome after surgery and critical care.

## Acknowledgments

None.

## Conflicts of interest

Authors declare that there is no conflict of interest.

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