

Management of perioperative stress in children and parents. Part I — The preoperative period

Jacek Litke, Agnieszka Pikulska, Tomasz Wegner

Department of Anaesthesiology and Intensive Therapy, Pomeranian Medical University in Szczecin

ABSTRACT

Hospitalisation and surgery are undoubtedly one of the most difficult experiences the children and their parents have to face. The lack of appropriately provided information about treatment and other hospitalization-related aspects increases anxiety and uncertainty.

Besides showing sincere empathy, physicians working with paediatric patients should know the strategies to reduce perioperative stress in children and their families.

The first part of our paper describes various well-tried methods of preoperative management, some of which can be applied before hospitalization. The crucial elements of such a strategy are to dissipate the emerging doubts by providing children and parents with relevant and understandable information and to familiarise them with the hospital setting.

Key words: perioperative medicine, surgery; surgery, anaesthesia, children; children, anxiety

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Children consider general anaesthesia the most terrifying period of their hospital stay [1]. Minimisation of stress in children and their parents should be a priority for hospital personnel. For over five decades, many countries have been using special programmes and standards for children preparation for hospital stay, stress-free induction of anaesthesia and effective postoperative pain management. Moreover, abundant literature on stress-related issues designed for physicians, nurses, psychologists and parents have been available. In 1941, “significant emotional reactions in children undergoing anaesthesia and surgery” were described in the USA [2]. In Europe, that was the wartime and many countries still applied the widely popularised methods advocated by Moritz Schreiber and intended to “break the will of the child” [3]. It is not surprising then that perioperative stress in children started to be dealt with many years later.

According to our observations, the knowledge on perioperative stress-related issues is insufficient in many Polish centres; children and their parents are treated in a too impersonal way, which mainly concerns departments attending both children and adults where educational trainings for management of children are less common. The above situation might be associated with the fact that during the period of

worldwide legislative interests in the issues in question our country was undergoing the system-related transformation, whose problems were obviously dominating.

In 1989, the United Nations Convention on the Rights of a Child strongly emphasised that children have to be listened to and their opinions on treatment and decision-making should be seriously considered. In 2003, the Ministry of Health of Great Britain published the standards of hospital treatment. According to them, children and adolescents should be provided with the medical aid integrated and coordinated with their special needs and needs of their families. Children and their families have to be treated with respect. They should receive information and support to be able to understand and cope with the disease, injury and treatment. Both parents and children should be encouraged to participate actively in decision-making regarding therapy and care; whenever possible, children ought to have the right to choose and express their will. Apparently, in Poland much is to be done in this respect.

PERIOPERATIVE FEAR AND ANXIETY

In many cases, the period of child’s hospitalisation and surgery requiring general anaesthesia is full of fear and

uncertainty. According to different authors, severe preoperative fear affects 40–60% of young children [4, 5, 6]. The anxiety occurring during this period is a subjective feeling characterised by increased stress, nervousness, fear of the unknown. [7]. This anxiety is expressed in various ways (verbally, which is rarer and behaviourally) as agitation, increased muscle tone, deep breaths, frightened face expression, shivers, silence, cessation of playing, spontaneous urination, crying, and active escape [4, 5, 8]. Younger children (< 6 years) are primarily afraid of separation from their parents. Older children are anxious about the anaesthetic procedure and surgery, including pain and mutilation [4]. The separation-related anxiety can already be observed in children aged 7–8 months and reaches its highest level at the age of one year [9]. Generally, younger children have difficulties in expressing verbally the sources of their anxiety; it is known, however, that the commonest causes of anxiety in children awaiting surgeries are “the unknown”, “a needle” and “anaesthesia” [10].

It should be remembered that perception and understanding of the world (the surroundings) in children and adults are different. The children without psychological educational preparation are likely to feel that the hospital stay and surgery are some form punishment for their bad behaviour [11, 12]. Preparation of children to reduce their fears makes the hospital stay less unpleasant; therefore, it should be included in routine management.

FACTORS AFFECTING THE LEVEL OF ANXIETY

Children react to the hospital setting in various ways. Many different factors affecting the level of hospital stress have been described, thus children should be prepared for such difficult experiences individually.

Children aged 1–5 years are most highly exposed to strong preoperative anxiety [7]. The increased risk group also includes shy, withdrawn children, with high IQ, difficulties in adaptation, past negative experiences related to visits at the doctor’s or hospital stays, and those with single or divorced parents [13, 14]. Additionally, lack of siblings and anxiety of parents, easily recognized by children, increase the fears of young patients. Noteworthy, children undergoing one-day surgical procedures have demonstrated markedly lower levels of anxiety compared to those staying in the hospital setting over night. It should be emphasized that pharmacological premedication substantially reduces anxiety and fears in children [7].

CONSEQUENCES OF PERIOPERATIVE ANXIETY

Numerous literature data indicate that severe preoperative anxiety in children results in postoperative behavioural changes, which include general anxiety, nocturnal fears, bed-wetting, feeding problems, apathy, withdrawal, sleep

disorders, and aggression towards authorities [7, 10, 15, 16, 17]. The observations covering 2-week preoperative periods demonstrated that 60% of children undergoing surgeries developed negative behavioural changes [7, 18]. Another study involving the period of one year analysed the behaviour of children aged 2–10 years in several stages. Two weeks after surgery, more than 54% of children showed negative postoperative mental reactions; in 20% of them they persisted for 6 months whereas in 7.4% were still present after one year [7]. Besides psychological consequences, preoperative anxiety is likely to prolong the induction of anaesthesia. Children with high levels of preoperative anxiety were found to experience stronger postoperative pain over three post-surgery days and required higher doses of analgesics. Moreover, the incidence of consciousness disorders, i.e. delirium (confusional) syndromes, in recovery rooms was higher in this group of patients [15].

Another adverse sequel of preoperative anxiety is the activation of neurohumoral stress response. In general, the triggering factors include pain, surgery, cold, infection, as well as fear and anxiety, which increase the levels of cortisol and adrenaline and induce excessive activation of natural killer (NK) lymphocytes [19, 20]. The relationship between neurohumoral and immune systems is two-directional [20]. In addition to enhancing the negative nitrogen balance, which leads to prolonged wound healing, the stress reaction also causes postoperative immunosuppression, i.e. increased susceptibility to infections [21, 22, 23].

The use of various methods reducing preoperative anxiety in children decreases the incidence and severity of stress [17, 9, 24].

PREPARATION OF PARENTS AND PROVISION OF INFORMATION

Parents should be early provided with detailed information and instructions concerning planned medical procedures as well as preparation of children for hospitalization. The suitable leaflets and books read by older children or parents may be of help. Nevertheless, the responsibility for psychological preparation of children cannot be fully shifted onto parents, as they may not manage, no matters how willing they are. In many cases, parents lack appropriate psychological knowledge and information regarding hospital medical procedures.

Many hospitals worldwide sent parents the information letters, occasionally also separate leaflets for children adjusted to their age. Some hospitals have special websites. All the measures mentioned are considered as initial preparation of children and parents for hospitalization and treatment. They may also help to determine the additional data that will be needed on hospital admission. According to some study findings, lack of information was the major

cause of preoperative anxiety. Therefore, detailed explanations regarding any doubts provided to parents and children are essential [24].

Parents of hospitalized children often experience fear, discomfort, helplessness, disorientation, which are easily transferred to children [25]. Some literature data indicate that parents considered needles as the most stressful element for their children; the most effective strategies to reduce the child's anxiety were soothing talks and explanations provided by physicians and nurses. The most negative emotions in parents were associated with observing their children falling asleep during anaesthesia [10].

INFORMATION FOR CHILDREN

The suitable information provided by competent individuals to children and not only parents has long been considered essential for preparation of children for surgery. Many countries have specially trained personnel of pre-hospital outpatient departments to fulfil this function. The children as young as 7–11 years already know what information they need. Left uninformed, particularly when they realise that their parents are unable to deliver explanations, induces the feeling of isolation and loneliness, which increases their preoperative anxiety [26].

Listening to the child enables the physician to tailor the proper range and way to pass information adjusted to age, understanding, expectations, as well as religious and cultural aspects. The effective method is to encourage children to draw or write down everything they would like to know before going to hospital or their expectation related to hospital stay. Optimally, such conversations should take place in the home setting, or at least in comfortable friendly conditions, which the multi-bed hospital room or hospital corridor obviously do not belong to. Children should have enough time to express graphically their fears and formulate questions [3]. According to the study by Miller, in which the above conditions were met, nine children aged 7–11 years asked 61 various questions about the hospital stay [30]. If left unaided, parents would not be able to answer the majority of them.

PROGRAMMES FOR CHILDREN PREPARATION

Numerous reports suggest that programmes for preoperative preparation of children reduce the level of anxiety and help to cope with new difficult situations [31]. The behavioural programmes have been changed over time. In many countries, preparation of children starts many days before admission and is provided by community nurses visiting children at home. In Poland, no such programmes function.

In the 60^{ties} of the 20th century, programme involving guided hospital strolls, meeting staff members, and trust inspiration was introduced in the United States [31]. During

the next decade, the dominating strategies were based on psychodramas, in which children were familiarised with hospital specificity by role-playing using dolls and video films [32]. In the 80^{ties}, the methods were further developed focusing on abilities to cope with a particular difficult situation [32]. At present, it is believed that programmes based on such abilities are the best form of children preparation for anaesthesia and surgery. With their use, preoperative anxiety of children can be effectively alleviated [33]. Walks around the hospital and reading brochures are currently recognised as poorly effective; the strategies applying video films, psychodramas, playing with dolls are found slightly more effective [12].

Noteworthy, the preparation programmes in question might be expensive, if additional equipment, facilities, child life specialists (USA) or play specialists (Great Britain) have to be involved. In Poland, no such specialists are trained.

The programmes should be tailored to the child's age; yet still not all children construe them in the anticipated way. It has been disclosed that children > 6 years of age make better use of programmes initiated 5 days before surgery compared to one day before the procedure. This age group is likely to require more time to analyse and familiarise themselves with the information provided [34].

It is worth mentioning that the programmes discussed may negatively affect children < 3 years of age, which is likely to be associated with their inability to separate the world of reality and imagination. This ability is fully developed about the age of 6 [14].

Children with past negative experiences related to hospital stay require special attention as provision of routine information can evoke bad memories and increase anxiety [34, 35, 36]. Considering this, it seems that qualification of all children to the programmes is not grounded. Another limitation regards differences in preparation strategies and methods of anaesthesia in individual hospitals. It is worth highlighting that anxiety in children can always be reduced by playing with them.

BOOKLETS

Various methods are used to prepare children and provide them with information about the hospital stay, e.g. films [37], computer presentations and animations [38], role-playing with the clown-physician [39], and special books [40]. Telling stories or reading books has been a well-recognized method applied by nurses [41]. Its effectiveness is high; the method is cheap and easily available. Books can also be read by parents before admission to hospital. Such books were demonstrated to help children to cope with fears and anxiety related to hospitalization [42].

The books are didactic in nature and can bring physicians and nurses closer to the level of perception and verbal

communication of children of various ages, which should help to find “the common language”.

Many books preparing children for various stressful situations are published worldwide (e.g. at the dentist’s, at the doctor’s, hospital stay, new siblings, the first day of school, etc.). They are written by teams of experts (paediatricians, psychologists, paediatric psychologists, anaesthesiologists) and are often reviewed by children before edition. In general, children are keen on books; illustrations are better received than texts and have better effects on the child’s imagination. Moreover, the child can refer to the personal experiences of a hero, which creates the basis for further talks. The crucial thing the adults can do is to help the children to express their feelings, to cope with emotions positively and constructively and to feel respected and appreciated [43]. According to many studies, booklets for children delivered during pre-operative visits reduce the levels of anxiety both in children and in mothers [44, 45, 46]. In Poland, two books translated from those published in Canada and France are available i.e. “Franklin goes to the hospital”, “Camille goes to the hospital”. The former can be recommended for pre-school children, despite the unfortunate use of the expression “sticking of a needle”. The other one is extremely superficial and does not provide many relevant data, not to mention that half of it is devoted to clowns-physicians, i.e. techniques completely unknown in our country.

Undoubtedly, the book worth recommending is “Julka in the hospital” written by Dr Marcin Rawicz and published by Abbott. The book contains separate pages for parents plus additional pictures and texts designed for children. Furthermore, the book is very colourful and accessibly explains what the children may expect during their hospital stay, with special focus on anaesthesia, surgery and the postoperative period. More importantly, it is adjusted to the Polish realities and is available as a free PDF file online; parents should be instructed to enter the title in the Web search engine.

STRESS REDUCTION STRATEGIES VERSUS PREMEDICATION

As already mentioned, the preparation programmes, although relevant, are not the only form to soothe preoperative anxiety in children. The methods should be tailored to the child age and risk factors of severe fear. In some cases, the programme used has no desired effects on children yet markedly alleviates the anxiety of parents. In such cases, premedication should be beneficial. In Poland, where behavioural programmes are actually lacking, pharmacological premedication appears to be well justified in the majority of children (especially in the pre-school children), which was confirmed by the study demonstrating that children premedicated with oral midazolam showed significantly lower incidence of behavioural disorders during two weeks

after surgery, compared to children without premedication [47]. Similar results were obtained in another randomised, controlled study [48]. Considering the above, the results of the study carried out in New Haven (USA) are of interest. The authors created the ADVANCE (i.e. anxiety-reduction, distraction, video modelling and education, adding parents, no excessive reassurance, coaching, and exposure/shaping) programme and used it in a large study population ($n = 408$). The ADVANCE group of children demonstrated substantially lower fear and anxiety in the preoperative period than those without ADVANCE. In children involved in the programme, the delirium (confusional) syndromes in recovery rooms were rarer, analgesic requirements lower and hospitalisation shorter. Nonetheless, the effectiveness of ADVANCE was found comparable to oral midazolam in a dose of $0.5 \text{ mg kg b.w.}^{-1}$. Moreover, ADVANCE and midazolam were equally effective in reducing the anxiety during induction of anaesthesia, yet the cost of the programme was much higher [14].

In many countries, the agent most commonly used for premedication in children is oral midazolam, mentioned before. The confirmed effectiveness of oral pharmacological premedication does not mean that the educational programmes should be abandoned or time devoted to talks with children and parents shortened.

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Corresponding author:

Jacek Litke MD, PhD

Department of Anaesthesiology and Intensive Therapy,

Pomeranian Medical University in Szczecin

ul. Unii Lubelskiej 1, 71–252 Szczecin

e-mail: jaclitke@life.pl

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The perioperative period, less commonly spelled the peroperative period, is the time period describing the duration of a patient's surgical procedure; this commonly includes ward admission, anesthesia, surgery, and recovery. Perioperative generally refers to the three phases of surgery: preoperative, intraoperative, and postoperative. The goal of perioperative care is to provide better conditions for patients before operation, during operation, and after operation.[1]. YouTube Encyclopedic. 1/3. Preoperative anxiety and stress are present in up to 60% of pediatric patients undergoing surgery, having a great physiological and emotional impact on children in both the short and long term. There are many reports on the use of music therapy in the perioperative period as a complementary technique in the preoperative stress and anxiety management. However, there are no assessments of the effect of this intervention on the physiological variables, such as salivary cortisol. Full Title of Study: "Impacto de la música en el estrés Preoperatorio en niños sometidos a cirugía General". Study Type Download Citation on ResearchGate | Management of perioperative stress in children and parents part II - Anaesthesia and postoperative period | The majority of children, even those well prepared and with positive attitudes, experiences stress in the operating theatre and during the postoperative period. In some cases, the stress is even stronger for their parents. Numerous reports suggest that preoperative preparation programs and perioperative information reduce anxiety levels and help the child cope with new and difficult situations [1, 33,34][35]. The presentation of suitable information by competent individuals to both the child and the parents has long been considered essential for pediatric surgery preparation [12].