CORRESPONDENCE

Principles of Pediatric Emergency Care

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Useless Therapeutic Option

On page 745 of the article, the following is stated: “Although a rapidly rising fever triggered the seizure, the administration of antipyretic drugs (ibuprofen, paracetamol) is often forgotten in practice.” A search of the current literature (PubMed: “febrile seizure—prevention/treatment”) shows that it has been known for years that antipyretics are inactive in treatment or prophylaxis of febrile seizures. Nothing has been “forgotten”!

Unfortunately, most current textbooks on pediatrics recommend the administration of paracetamol or ibuprofen – either before, during, or after febrile seizures. Most departments of pediatrics advise the parents of affected children to do the same. If a child has once suffered febrile seizures, the first signs of fever trigger the unreflected and useless administration of antipyretics (which is also stressful to the liver and kidneys). It is therefore quite wrong that a CME article should spread this useless and dangerous “therapeutic option”. Of course, it is still sensible to administer an antipyretic to a child who is under considerable stress due to fever, with impaired general condition, hyperventilation, exsiccosis, etc.

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Use of Developed Products Preferable

The CME article on the treatment of pediatric emergencies (1) is intended to allow the reader to provide a treatment that is “goal-oriented and appropriate to the special needs of sick children”. The authors correctly regard emergency cricothyrotomy as a last resort. However, their recommendation for respiratory management in this case appears to contradict the objective of providing postgraduate training: “A puncture coniotomy is performed with a 14 Gauge venous cannula, which can then be connected to the ventilation bag either through a 3.5 mm endotracheal tube connector

or through a 10 mL syringe and a blocked tube.” A chapter in a book on transtracheal ventilation is cited (2) and the connection of an anesthesia bag is described. This is all in accordance with the widespread misapprehension that the respiratory channel created by cricothyrotomy allows adequate ventilation (3).

The “do-it-yourself” instructions for emergency cricothyrotomy sets seem rather questionable in view of the availability of properly designed medical products. The lumen of an intravenous cannula should be as large as possible; the wall thickness should be low and the material flexibility high. Current products can fulfill these requirements, but this makes them unsuitable for creating temporary access to the respiratory tract after the metal cannula has been removed (unfortunately, this step was not mentioned). They readily kink at the skin, as most users well know from their practical experience with venous access.

The self-assembled set uses a 14G intravenous with a defined internal diameter of 1.7 mm, an external diameter of 2.1 to 2.2 mm (depending on the manufacturer), and a wall thickness of 0.4 to 0.5 mm. In comparison, a commercially available set for puncture cricothyrotomy, with an internal diameter of 2.0 mm, has a larger lumen, much higher flow (Hagen-Poiseuille Law) and greater wall stability.

Therefore, specially developed products should be favored for this rare indication, in order to reduce additional risks—such as having to look for individual components or disconnection—in these extreme situations, in which there are major problems in oxygenating the child.

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Isotonic Is Better

The article recommends intravenous injection of a 20% glucose solution for the treatment of severe hypoglycemia and unconsciousness in type 1 diabetes mellitus in children, followed by continuous glucose infusion (1).

It must be born in mind that this glucose solution is strongly hypertonic (1110 mosmol/L), so that it would be expected that this should irritate the wall of the vein. After repeated episodes of hypoglycemia and repeated glucose injections, all peripheral veins will be obliterated sooner or later. Rather than using high percentage glucose solutions, it is better to use isotonic 5% glucose solution, as even a slight increase in blood sugar is enough to recover consciousness. An alternative is treatment with IM glucagon (2).

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Pay Attention to the Target Group

The paper discussed (3) was addressed to emergency physicians. The rate of severely ill children is low (less than 1% of all emergency cases). Because of the low incidence we suggest hands-on training possibilities for emergency physicians in pediatric and pediatric surgery departments. As a prerequisite in caring for paediatric emergency patients the equipment (drugs, material etc.) available plays a key role. The regular equipment in the German EMS is according to DIN.

The authors should address the following points:

- Non-invasive oscillometric blood pressure measurement only assesses the mean arterial pressure. Values like 98/64 mm Hg give a fiction of accuracy.
- Do the authors only use cuffed endotracheal tubes (sometimes inflated, sometimes not), or do they mean cuffed and uncuffed tubes?
- Intravenous piritramide can produce respiratory arrest in a neonate even at a dose of 50 µg/kg. A dose of 30 µg/kg would be safer and could be repeated in 10 minutes if necessary. Morphine is more potent than piritramide (1:0.75), not only for its primary effect, but for its side effects as well, and should NOT be given at the same doses. Our experience suggests that opioids are underused in pediatrics despite their immense clinical value. There are no nebulizers in first aid materials, although families often have them.
- Although EMS vehicles generally do not carry nebulizers, the families of the affected patients often already have one at home.
- In general, emergency physicians have more experience with midazolam than with diazepam. Midazolam has nearly only inactive metabolites. If a seizure continues until the emergency physician arrives (12–15 min), it is a mistake to administer

a rectal drug. Intravenous midazolam and propofol are to be preferred.

- According to the ERC guidelines after the third attempt to place an IV catheter line or after 120 sec an intraosseous needle should be placed. What are the relevant prehospital risks of IO-access seen by the authors? Furthermore, the 22 G peripheral venous catheter is the smallest catheter in the EMS; this could be used to deliver 7 mL/kg/min of fluid to a child weighing 5 kg. Fluid resuscitation using a 26 G peripheral venous catheter is impossible. The recommendations of the association of German pediatric anesthesiologists for fluid management (1) represent the evidence, as does the work of Murat and Dubois. Fluid replacement should be done with a balanced, acetate-based full electrolyte solution, in children <3 years with the addition 1% glucose.
- The authors propose a treatment of diabetic ketoacidosis with 0.9% NaCl solution or 0.45% NaCl solution with glucose, but at the same time they warn of a cerebral edema of unknown etiology. Under conditions of hyperglycemia and hyponatremia a cerebral edema is anticipated. The free water infused follows the concentration gradient of sodium ions into the cells (2). A balanced, acetate-based full electrolyte solution would be better.

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Additions Are Needed

As advance analgesia is not possible, venipuncture must be performed on the conscious child.

If there is an indication for venipuncture, tedious and painful failed punctures must be avoided. A maximum of two attempts should be made at the classical and promising sites of puncture. If those fail, intra-osseous puncture should be performed. The possible complications are of secondary importance only. The best puncture site is at the transition between the proximal and mid third of the lower leg. If the Cook needle is used, the infant's lower leg must rest on the palm of the operator, in order to avoid greenstick fractures.

The sentence "Symptomatic hyperglycemia in childhood is almost always due to diabetic ketoacidosis" is totally unacceptable. Ketoacidosis is a symptom, not the cause of excessive hyperglycemia. Volume replacement is actually very important in the therapy of hyper-