

## ACCIDENTAL ACUTE INTOXICATION WITH DENTOCALMIN IN CHILDREN – A SEVERE FORM CASE PRESENTATION

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### Abstract

The authors present the case of a child, aged one year and seven months, who was admitted to the Emergency Unit of the County Emergency Hospital Craiova, because of an accidental ingestion of Dentocalmin, with a cardiorespiratory stop. After 25 minutes of cardiorespiratory resuscitation, normal sinus rhythm is re-established; he is artificially ventilated; 48 hours after his hospitalization, he started to breath spontaneously. He is discharged after 27 days of hospitalization, with serious neuropsychic sequels.

**Key words:** Dentocalmin, acute intoxication, child.

### Introduction

Our country annually registers about 16,000 cases of intoxication in children. Intoxications with drugs, caustic household products, industrial products (antifreeze solution, petrol, and gas), and alcohol are dominant.

The highest frequency of the accidental acute intoxications is met in the age group 0-7 years (5); among them, more than 50% are caused by drugs (2).

Dentocalmin is a dental product, under the form of solution with external use. Regarding its pharmacotherapeutic action, it is a local anesthetic, an analgesic and an anti-inflammatory product. It is found under the form of bottles of 10 ml which contain: Lidocaine 2 g, Menthol 2 g and Phenol 2g (3).

### Case presentation

The child S.G.E. (F.O. 51828/ 2007, 2<sup>nd</sup> Pediatrics Clinic, Emergency County Hospital Craiova), male, aged 1 year and 7 months, Weight= 14 Kg is admitted in the Emergency Unit of the County Hospital Craiova, with a cardio-respiratory stop, on October, 20, 2007.

The anamnesis reveals that the child's state suddenly worsened, presenting – when in full health – a sleeping state followed by coma in approximately 10

minutes, after the mother administered him, by mistake, a few ml (5-6) of Dentocalmin, without using a dropping glass. The mother mistook the bottle of Dentocalmin for the bottle of Vigantol Oil (with a dropping glass), from which the child used to receive a daily 2 ml dosage. He was transported by ambulance for hospitalization.

*Heredocolateral antecedents* – young, healthy genitors; mother with higher education.

*Physiologic personal antecedents.* Single child, on term and normal delivery, W<sub>B</sub>= 3,300 G, Apgar score 10, artificial feeding when born with Milumil, Lactovit, correctly diversified when 4 months, vaccinated according to W.H.O. vaccination scheme; rickets prophylaxis with Vigantol Oil 2 drops /day; normal physical and psychomotor development.

*Pathologic personal antecedents:* 2 hospitalizations: the first when 7 months and the second when 1 year and 6 months for acute bronchiolitis.

*Life conditions:* an apartment in urban area, in a block of flats, 2 rooms, 3 persons.

*When presented in the Emergency Unit,* the child was in an extremely bad state, abolished conscience, marmorated teguments, cold and cyanotic extremities, absent peripheral and central pulse, absent spontaneous breath, mydriatic, non-reactive pupils.

After 25 minutes of cardio-respiratory resuscitation (O.T.I. with assisted ventilation, external cardiac massage, adrenaline i.v., Na bicarbonate i.v., E.V.P. with physiologic serum) the heart activity is re-established. The stages E.K.G. – initial asystoly – subsequent electromechanic dissociation and ventricular fibrillation; after 25 minutes, the child had a synusal rhythm, C.F.= 132 b/min [fig.1]. The state of the child remained severe, with an abolished conscience and mechanically ventilated.

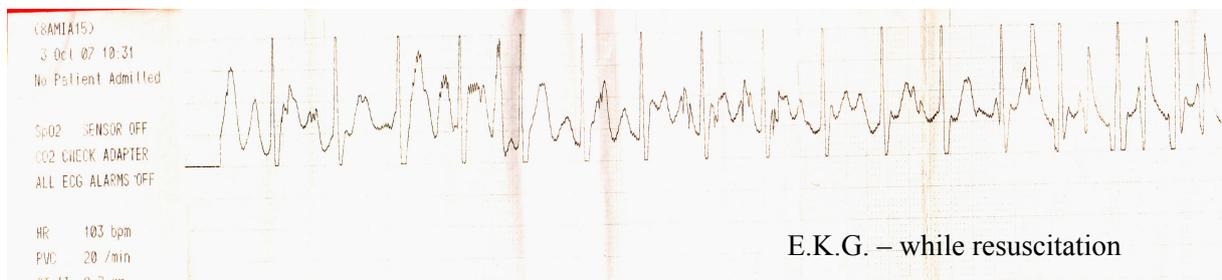
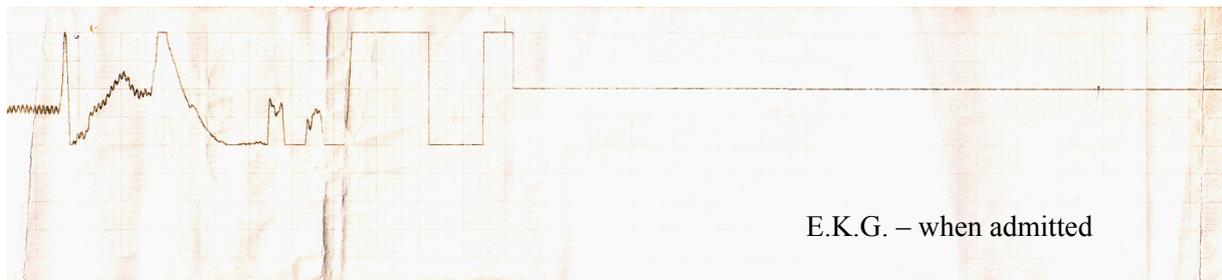
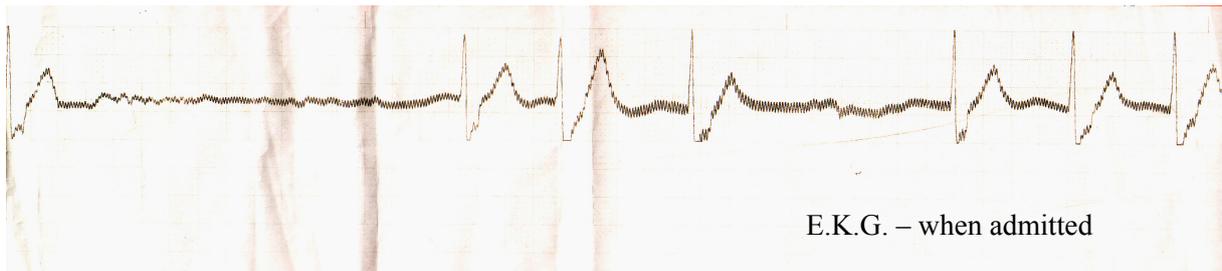


Fig. 1. E.K.G stages – initial asystoly – subsequent electromechanic dissociation and ventricular fibrillation; after 25 minutes, the child had a synusal rhythm, C.F.= 132 b/min.

He is admitted to the Intensive Care Unit where the intensive treatment goes on: assisted ventilation, gastric washing, and intravenous treatment with Manitol, Furosemid, Dexametazone, Piracetam, vitamin B<sub>1</sub>, B<sub>6</sub>, C, Tazocin.

*Investigations when admitted (20 X):*

Hemogram: Hb= 11.8 g%, T= 240,000/mm<sup>3</sup>, L= 7,500/mm<sup>3</sup>, N= 2%, S= 63%, E= 5%, Ly= 26%, M= 4%;

Glicemy = 85 mg%;

Micro Astrup: pO<sub>2</sub> 159.8 mmHg; pCO<sub>2</sub> 36.6 mmHg; pH 7.24; SO<sub>2</sub> 98.5%; BE -10.9 mmol/l; BE<sub>ecf</sub> -11.8 mmol/l; CHCO<sub>3</sub> st 15.9 mmol/l; p<sub>50</sub> 26.7 mmHg; Ct O<sub>2</sub> 18.8%; CHCO<sub>3</sub> 15.5 mmol/l; Ct CO<sub>2</sub> (B) 14.3 mmol/l; SO<sub>2</sub> (C) 98.9%;

Sanguine ionogram: Na<sup>+</sup>= 143 mmol/l, K<sup>+</sup>= 3.7 mmol/l, Cl<sup>-</sup>= 110 mmol/l, Ca<sup>++</sup>= 1.033 mmol/l.

2<sup>nd</sup> Day of hospitalization – the child breathes spontaneously and efficient (sat O<sub>2</sub> 99%), he presents rhythmic cardiac sounds, C.F.= 127 b/min, slender abdomen, present diuresis; however, his future evolution is questionable, since the child alternates between periods of somnolence and agitation, opistotonus, horizontal nistagmus, convulsions. He is fed through a nasogastric tube.

After two weeks of hospitalization, he starts his feeding per os, but the psychomotor acquisitions are lost: he does not speak, he does not walk, he reacts only to strongly painful stimuli, he presents a cerebral cry.

*Investigations performed while hospitalization:*

29 X: Hb= 8.4 g%, T= 230,000/mm<sup>3</sup>, L= 6,800/mm<sup>3</sup>, N= 2%, S= 68%, E= 3%, Ly= 10%, M= 7%, anisocytosis, poikilocytosis;

6 XI: Hb= 11.8 g%, T= 240,000/mm<sup>3</sup>, L= 8,500/mm<sup>3</sup>, N= 2%, S= 63%, E= 5%, Ly= 26%, M= 4%;

24 X: glicemy= 75 mg%;

Sanguine ionogram 24 X: Na<sup>+</sup> = 143.4 mEq/l, K<sup>+</sup> = 4.6 mEq/l;

E.g. F.O.: A.O. – normal aspect

Pulmonary X-ray: no pleural-pulmonary changes, heart in normal limits.

Skull C.T. (26 X): normal limits C.T. aspect, for native C.T. and postcontrast.

E.g. pediatric neuropsychiatry (30 X): vegetative status, reacting to strongly painful stimuli → 15 XI: Spastic tetraparesis, psychic and motor regression.

He continued to receive a treatment consisting of Diazepam, Fenobarbital, Cerebrolizin, Piracetam, Dexametazone, physiokinetotherapy.

After 27 days of hospitalization, he is discharged, balanced from the cardiac and respiratory point of view, with feeding per os, a good digestive tolerance, presenting serious neuropsychic sequels and with the following recommendations:

- to carry on medical recovery - physiokinetotherapy;

- to receive a drug-based treatment with Encephabol, Piracetam, and Vitamin B.

A year after the child was discharged (October 2008), he was admitted again in the Clinic (F.O.47113/2008) for a respiratory disease. In this period, the child followed a recovery treatment - physiokinetotherapy and drug-based treatment and progress was registered: he walks if supported, utters some words, and interacts with the surrounding persons.

**Discussions**

We presented this case because of the severe intoxication produced by Dentocalmin, an apparently harmless drug.

The components of Dentocalmin have the following effects:

Phenol (phenic acid, carboic acid), in low concentrations (0.2 -1%), has a bacteriostatic effect, and when 3-5% it has a bactericidal action, due to the protein precipitation (4).

Locally applied, in concentration of 2%, the phenol is a local anesthetic, decreasing the excitability of peripheral nerves. In solutions of 5%, it is irritant and inflammable, its great power of penetration determining deep lesions, which require a long period of healing (6).

Menthol (Mentholum) – is obtained from the mint volatile oil (natural menthol) or through synthesis (synthetic menthol). It is antipruriginous and aromatizing (6).

Lidocaine (Xiline) – is a local anesthetic with an amidic structure, which is active in all types of local anesthesia, including local anesthesia (under the form of solutions of 2-4% or Lidocaine ointment 5%). Intravenously administered or after absorption at the administrated place, lidocaine causes systemic effects: sedative, analgesics, anticonvulsive, antiarhythmics (3).

In case of overdose (the maximum admitted dose is 4 mg/Kgc/day) or fast intravenous administration, lidocaine can cause convulsions, tachycardia, lipotimy, high blood pressure, followed by coma, bradycardia, hypotension, respiratory depression. For our hospitalized child, the maximum dose of Lidocaine admitted during 24 hours was 56 mg (3). Taking into account that he received about half of the Dentocalmin bottle content, it results that he

received approximately one dose of 1,000 mg of lidocaine, which represents twenty times more than the maximum admitted dose for 24 hours; hence the gravity of intoxication (the cardiac and respiratory stop, the coma).

Between January, 1, 2005 and April, 1, 2008, at the Antitoxic Centre of the Emergency Clinical Hospital for Children “Grigore Alexandrescu”, Bucharest, there were admitted and reported 22 cases of acute intoxication with Dentocalmin. The evolution was as follows: 15 cases with full recovery, 2 deaths, and 3 cases with serious neuropsychic sequels (7).

Following the requests of the Toxicology Department of the Emergency Clinical Hospital for Children “Grigore Alexandrescu”, Bucharest (Professor Coriolan Ulmeanu), the Drug National Agency decided, in January 2008, an urgent withdrawal of all the Dentocalmin which was found in the communitary pharmacies. This happened because Dentocalmin had to be given according to market authorization and only within hospitals (in dental offices, respectively) (1).

We have to mention that, subsequently - in September, 2008 – an infant aged 4 months was

admitted in the clinic, with a Dentocalmin intoxication; he was administered by his mother, again by mistake, Dentocalmin instead of Vigantol Oil. This time, there was registered a favorable evolution.

For the presented case, we pointed out:

- the recovery potential of the heart and lungs in children – initially healthy, which after a long period of resuscitation recovered their normal activity;
- the gravity of the child’s intoxication, requiring an initial treatment of cardio-respiratory resuscitation, followed by medical services in the Intensive Care unit and Pediatric Clinic;
- a long period of hospitalization (27 days);
- serious neuropsychic sequels and lasting treatment for neuropsychic recovery;
- mother’s psychic impact – a feeling of guilt – the one who mistook the bottle of Vigantol Oil for the bottle of Dentocalmin

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