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# GASTROESOPHAGEAL REFLUX AT INFANTS

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***Abstract:*** *Gastroesophageal reflux is a common sufferance among infants' specially premature ones. We present a retrospective study over a two years period on newborns and infants admitted at the Childrens'Hospital Braşov for vomiting and regurgitation. We have used modern diagnosing techniques and treatment. Their overall outcome was good.*

***Key words:*** *premature infants, infants, gastroesophageal reflux, treatment.*

## 1. Introduction

Gastroesophageal reflux is the movement of stomach content into the oesophagus, past the lower oesophageal sphincter. Commonly it is due to a delay in gastric emptying or to a transient relaxation of the lower oesophageal sphincter. Many of the newborns manifest regurgitation after meals but this condition typically resolves after the age of 6 months [6, 9].

Regurgitation is typically in an effortless manner and may be associated also with heartburn, chest or epigastric pain.

In pathological cases gastroesophageal reflux may cause recurrent wheezing, cough or even apparent life threatening episodes [3, 11].

It may also be related to a sensibility to cow allergy and recently it was debated that it may be the first sign of the cow allergy [11].

The definition of gastroesophageal reflux underwent rigorous process and it is newly defined when the gastric content reflux causes problems and or complication [14].

## 2. Objectives

The aim of this study is to evaluate the outcome of infants with gastroesophageal proven reflux and the therapeutic methods that we have used.

## 3. Patients and methods

This is a retrospective study over a two years period (2005- 2007) at the newborns and infants admitted at the Newborn Department of the Childrens' Hospital Braşov for inconsistent vomiting. The study comprised of 16 infants.

## 4. Results

Distribution by sex shows that the boys were more encountered in the study group.

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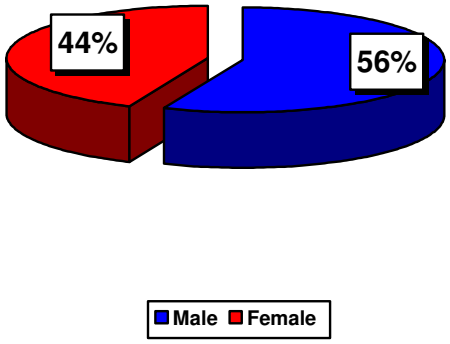
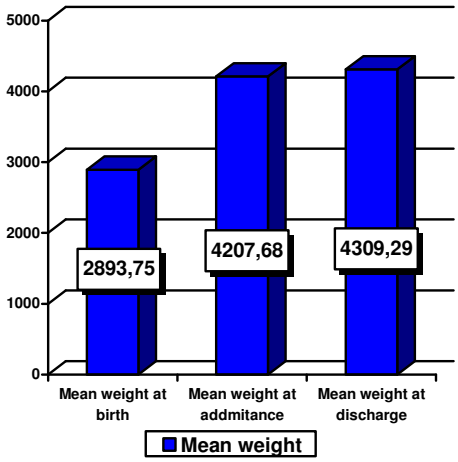
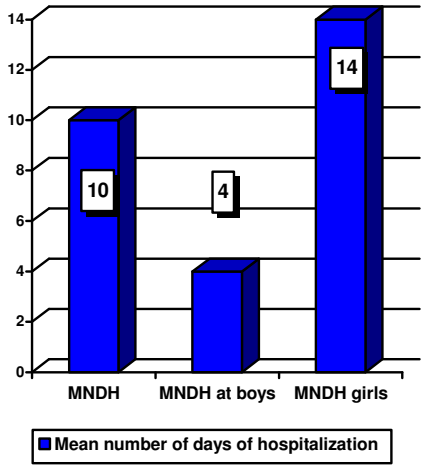



Graphic 1. *Distribution by sex*




Graphic 2. *Mean weight at birth, admittance and discharge*

When it is compared mean weight mainly newborns and infants with small birth weight are prone to gastroesophageal reflux. At admittance their weight appears to be normal and at discharge they gain weight.




Graphic 3. *Mean number of days of hospitalization (MNDH)*

In our study boys tend to have more admittance days than girls do.

All the admitted infants had undergone radiological examination with contrast substance and also ultrasound examination. All of them during admittance have received thickened formula feeding along with metoclopramid and position at 30 degrees.

The overall outcome was good. Vomiting tend to be reduced at discharge.

Follow up has shown good development and good weight curves with diminished vomiting over a six months of observation.

## 5. Discussion

Gastroesophageal reflux is implicated in several disturbances. Direct transnasal examination along with 24-hours potentiometry, biopsy of esophageal mucosa and acoustic analysis of the voice in children aged 8 months to 36 months have shown that dysphonia, oedema are caused by gastroesophageal reflux [1].

Among other problems due to gastroesophageal reflux, night time awakening is one that concerns parents. Several reports have described that night time awakening is a sign of gastro-esophageal reflux at children over the age of 3 months and remains a problem for the ones under the age of 3 years [16].

At children with mental retardation gastroesophageal reflux may have as manifestation self injury that can be very disruptive both for parents and children [15]. Also gastroesophageal reflux may be involved in children having different developmental problems like being unable to sit without support, early eating problems, absent pincer grasp reflex [2].

One of the main differential diagnoses remains between recurrent wheeze and gastroesophageal reflux. When therapy for respiratory symptoms fails it remains the therapy for gastroesophageal reflux, protracted bacterial bronchitis, cystic fibrosis and tracheobronchomalacia [3].

In a recent study of 85 infants and young children with recurrent wheezing and no gastrointestinal symptoms underwent 24 hour oesophageal pH monitoring as well as total serum IgE and specific IgE testing for eggs and milk. Among the 85 subjects 48.2% had significant gastroesophageal reflux. The main conclusion of the study was that about half of the children with recurrent wheeze are actually suffering of gastroesophageal reflux [11].

In order to evaluate the prevalence of gastroesophageal reflux, the Gastro-esophageal Reflux Questionanaire Revised was given to mothers of children under the age of 6 months in a rural community including in the study 128 pairs of mother infant. Symptoms of gastroesophageal reflux as measured by the questionnaire decreased with age in the first 6 months [18].

There are also reports regarding the apparent life threatening events related to gastroesophageal reflux [17]. Decreased baseline short activity variability among infants with apparent life threatening events and gastroesophageal reflux was found [17].

The most common causes of apparent life threatening effects as outlined by the multidisciplinary guidelines gastroeso-phageal reflux is responsible for 31% of cases, neurological insult for 11% and lower respiratory tract infection for only 8% [20].

We have used in the diagnoses of our patients radiology and ultrasound. Single contrast techniques are more sensitive for structural defects while double contrast views are used to evaluate the patient in upright position and also prone position [12]. Barrium swallow is used for patients that have dysphagia and vomiting [6]. Conventional ultrasound has been reported to be a non invasive tool in detecting reflux [4]. Even if it is a useful tool, ultrasound is still not the first choice as a test for gastroesophageal reflux because of its low specificity and sensitivity, but may reveal associated diseases [9].

There are wide variations in the treatment of suspected gastroesophageal reflux in premature infants and there is a big debate among neonatologists, gastro-enterologists and pulmonologists. A survey was taken in this categories at which participated a total number of 1021 neonatologists, 232 paediatric pulmo-nologists, 222 paediatric gastroentero-logists with a response rate of 47.5%. Pulmonologists reported that respiratory symptoms are due to gastroesophageal reflux, neonatologists reported that a therapeutically trial would be useful in treating premature babies for gastro-esophageal reflux, while no therapy was

effective also was supported by over 50% of the responders [7].

A percentage of 3% of all parents see gastroesphageal reflux as a problem seeking therefor for medical advice. There are several therapeutic measures that can be taken. The most used ones are metoclopramide, thickened feedings and positioning for children with proven gastroesophageal reflux under the age of two years [5]. Thickened infant formulas are created in order to increase the viscosity and are usually used in treatment of uncomplicated gastroesophageal reflux.

Several studies have been done in order to study the rheology and viscosity of a standard formula found on the Spanish market with or without the addition of 10g/100ml gluten free cereals. Formulas containing bean gum with 2.9/100g and a protein ratio similar to cow milk showed the highest and consistent viscosity. When the thickener is in formulas with a protein ratio similar to breast milk the viscosity was lower. The formulas containing starch achieved a lower and less consistent viscosity. In conclusion the viscosity of the thickened formulas depended a great deal on the agents used [10].

A number of 20 trials including 771 children were found in a metaanalysis. From these total number, eight dealt with thickened formula, five with positioning, and 7 with metoclopramide. The major outcomes of the metaanalysis have shown that thickened formula reduced the severity of regurgitation and the frecquency of emesis. The positoining studies have failed to show any benefit and as metoclopramide involvement in treatment of gastroesophageal reflux compared to placebo it appeared to reduce daily symptoms.

Metoclopramide on the other hand has a couple of side effects that have to be taken into account when starting therapy with it [5]. Cisapride was withdrawn due to its possible side effects and was a prokinetic agent used in the treatment of gastroesophageal reflux. Despite this there was a Cochrane data base research comparing cisapride treatment to placebo. There were studied ten trials that had significant heterogenicity between them. Four studies reported diarrhea as a major side effect, another study found no difference between the QT intervals after 3- 8 weeks of treatment. Cisapride did reduce significantly the reflux index and one study found no difference at all between cisapride versus no treatment [13].

The latest therapy for gastroesophageal reflux is pantoprazole starting from neonates. There are several studies dealing with this kind of treatment comparing different dosing schemes. The doses give to neonates range from 0.6mg/kg to 1-2 mg/kg. Pantoprazole was generally very well tolerated [19].

Proton pump inhibitors are beneficial in relieving symptoms at infants suffering from gastroesophageal reflux, but their usefulness in gastroesophageal reflux related behaviours is still in question [8].

There is still a need to a better understanding of gastroesophageal reflux and to come to an agreement among pediatricians regarding the treatment of this disease as well as the period of time that is needed until the disease is really cured.

## 6. Conclusion

1. Newborns and infants with small birth weight are prone to gastroesophageal reflux.
2. Thickened formula feeding, metoclopramid and positioning had a good outcome in our series of newborns.

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