

DETECTION OF VIRAL AGENTS IN ACUTE GASTROENTERITIS IN HOSPITALIZED CHILDREN FROM LISBON AREA



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INTRODUCTION

Gastroenteritis is a major cause of morbidity and mortality worldwide. Acute gastroenteritis is one of the most frequent disease in pediatric age, with significant associated morbidity, and is the second leading cause of hospitalization in Portugal, after respiratory infections.

AIM

The aim of this study was to determine the viral etiology of gastroenteritis in a cohort of children hospitalized due to acute gastroenteritis symptoms.

METHODS

From May 2011 to September 2011, 45 stool specimens were collected, from children up to 15 years old, hospitalized in two main Hospitals in the Lisbon area, for acute diarrhea. None of the children were currently taking antibiotics. For each child, a stool sample was collected in a sterile container. A questionnaire with demographic, clinical and epidemiologic data was also collected.

Viral RNA or DNA was isolated using the automated NucliSens® easyMAG™ (bioMérieux, France).

The enteric viral agents (Adenovirus serotypes 40 and 41, Astrovirus, Norovirus genogroups I and II and Rotavirus) were detected by multiplex RT-PCR (Seeplex® Diarrhea ACE Detection, Seegene). Fragments were separated by electrophoresis in a 2.0% agarose gel (Figure 1).

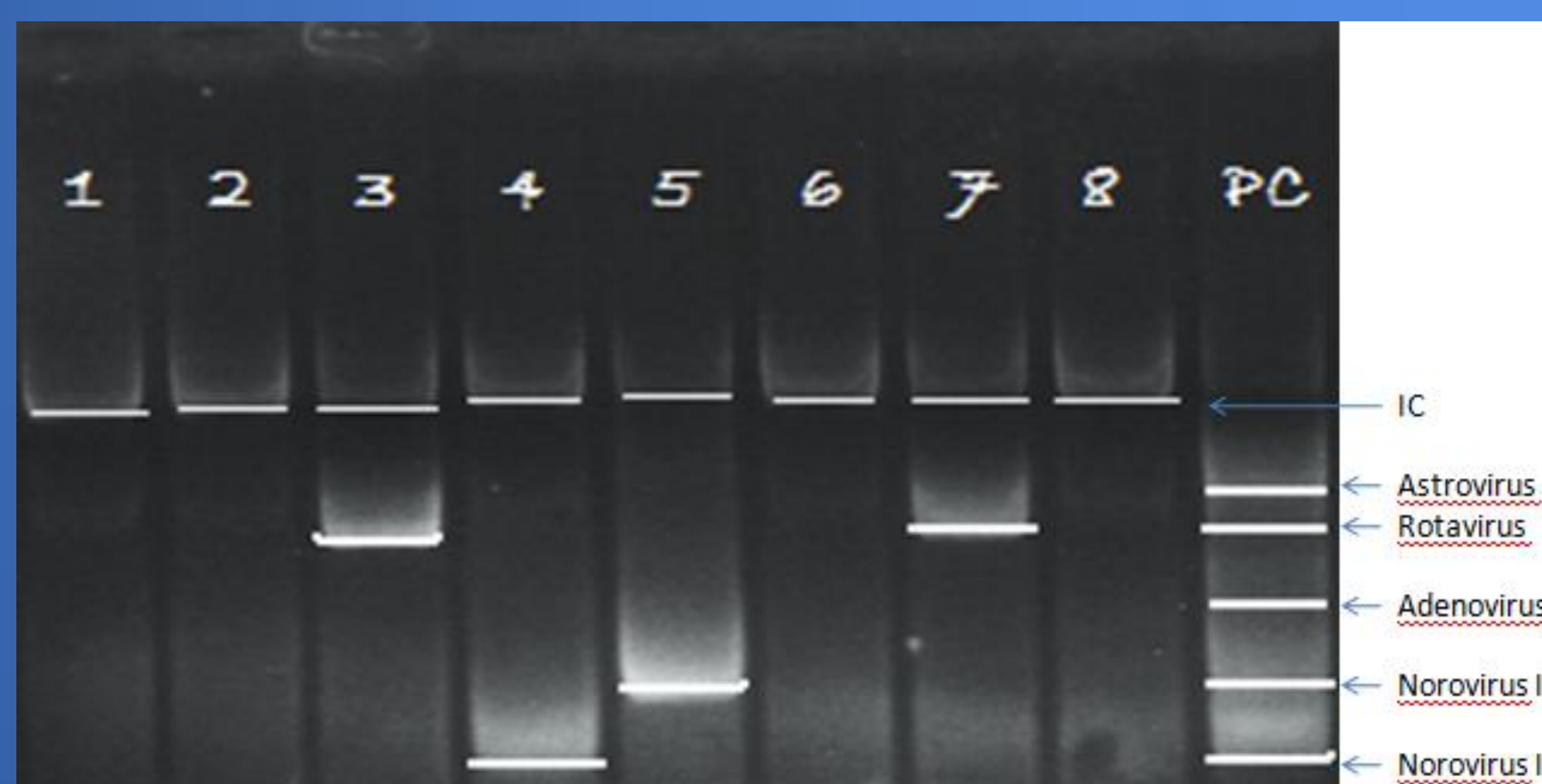


Fig. 1: Lanes 1, 2 and 6, negative samples; lane 3 and 7, Rotavirus; lane 4, Norovirus I; lane 5, Norovirus I; lane 8, negative control; PC-positive control; IC-Internal control.

The Adenovirus was isolated from young boy (4 years old) presenting also severe renal failure. The serotype of this Adenovirus was determined by DNA sequencing, belonging to serotype 41.

Children were stratified in three age groups: 27 (60%) children aged 0-2, 6 (13.3%) children aged 3-5 years and 12 (26.7%) children aged >6 years. The distribution of positive samples according to age group was 44.4% (n=12), 33.3% (n=2) and 8.3% (n=1), respectively (Figure 3).

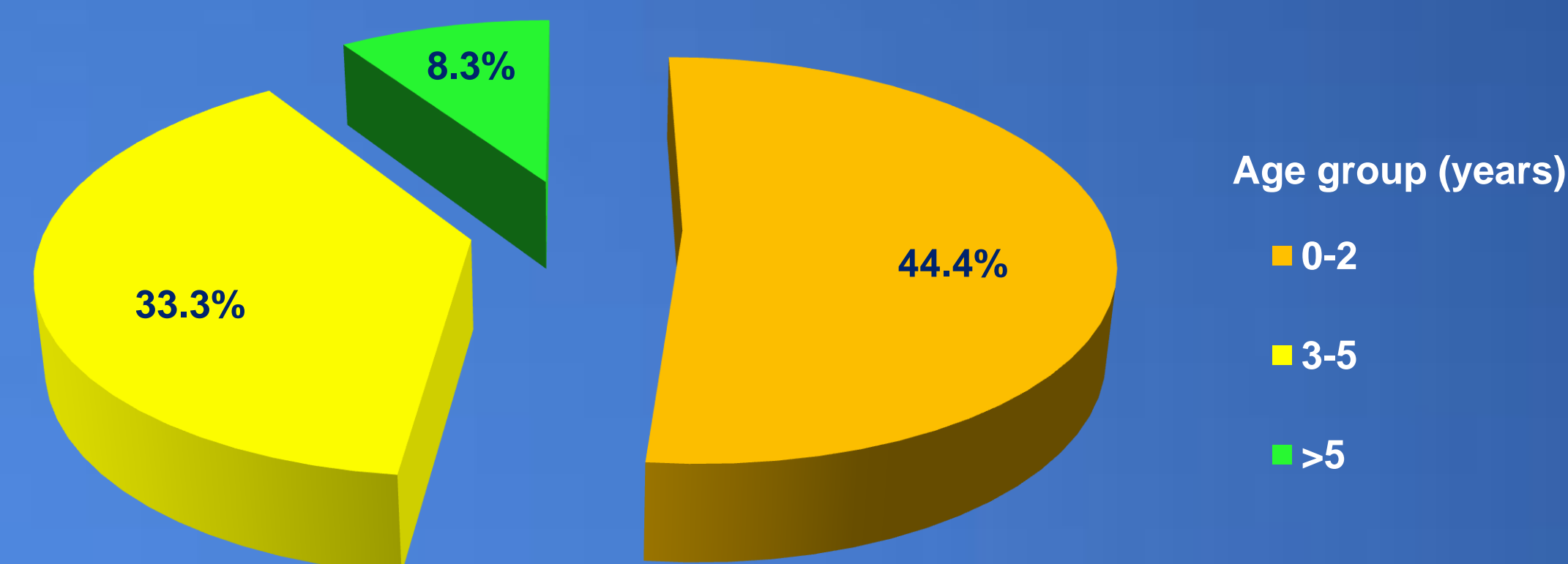


Fig. 3: Distribution of positive samples by age group.

The prevalence of the viral agents in each age group was as follow: children aged 0-2, Norovirus 58% (n=7) and Rotavirus 41.7% (n=5); aged ≥ 3, Norovirus 33.3% (n=1), Rotavirus 33.3% (n=1) and Adenovirus 33.3% (n=1) (Figure 4).

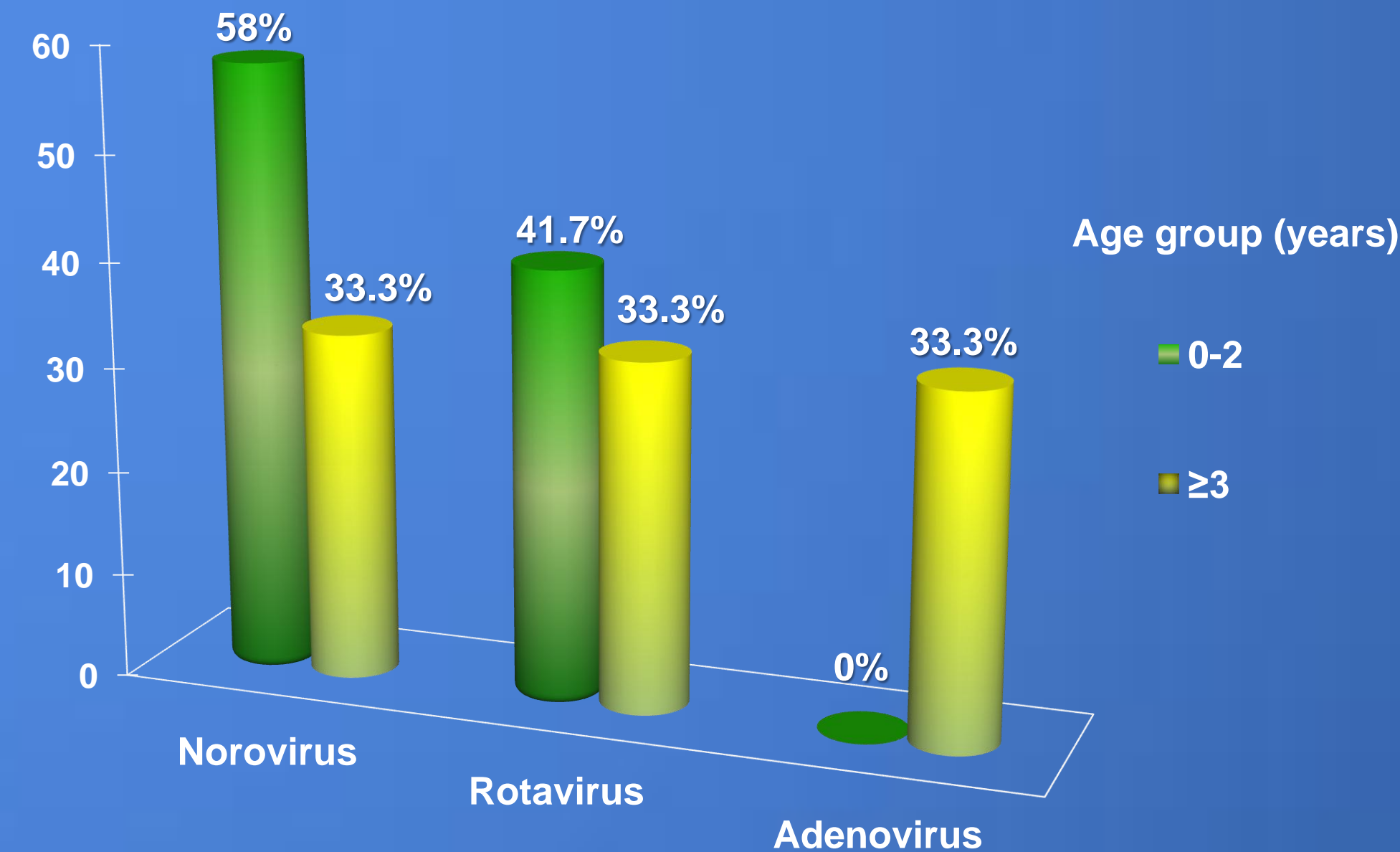


Fig. 4: Distribution of enteric viral agents by age group.

RESULTS

A total of 45 children participated in this study, aged between 0 and 15 years (mean age 4.3 ± 4.8 years), comprising 25 (55.6%) boys and 20 (44.4%) girls.

All but 2 children presented with acute diarrhea, accomplished by vomiting (66.7%), fever (62.2%), abdominal pain (37.8%), dehydration (28.9%) and respiratory symptoms (13.3%).

Of the 45 samples analysed, 15 (35%) were positive for enteric virus, distributed as follow: Norovirus (n=8; 53%), Rotavirus (n=6; 40%) and Adenovirus (n=1; 7%) (Figure 2).

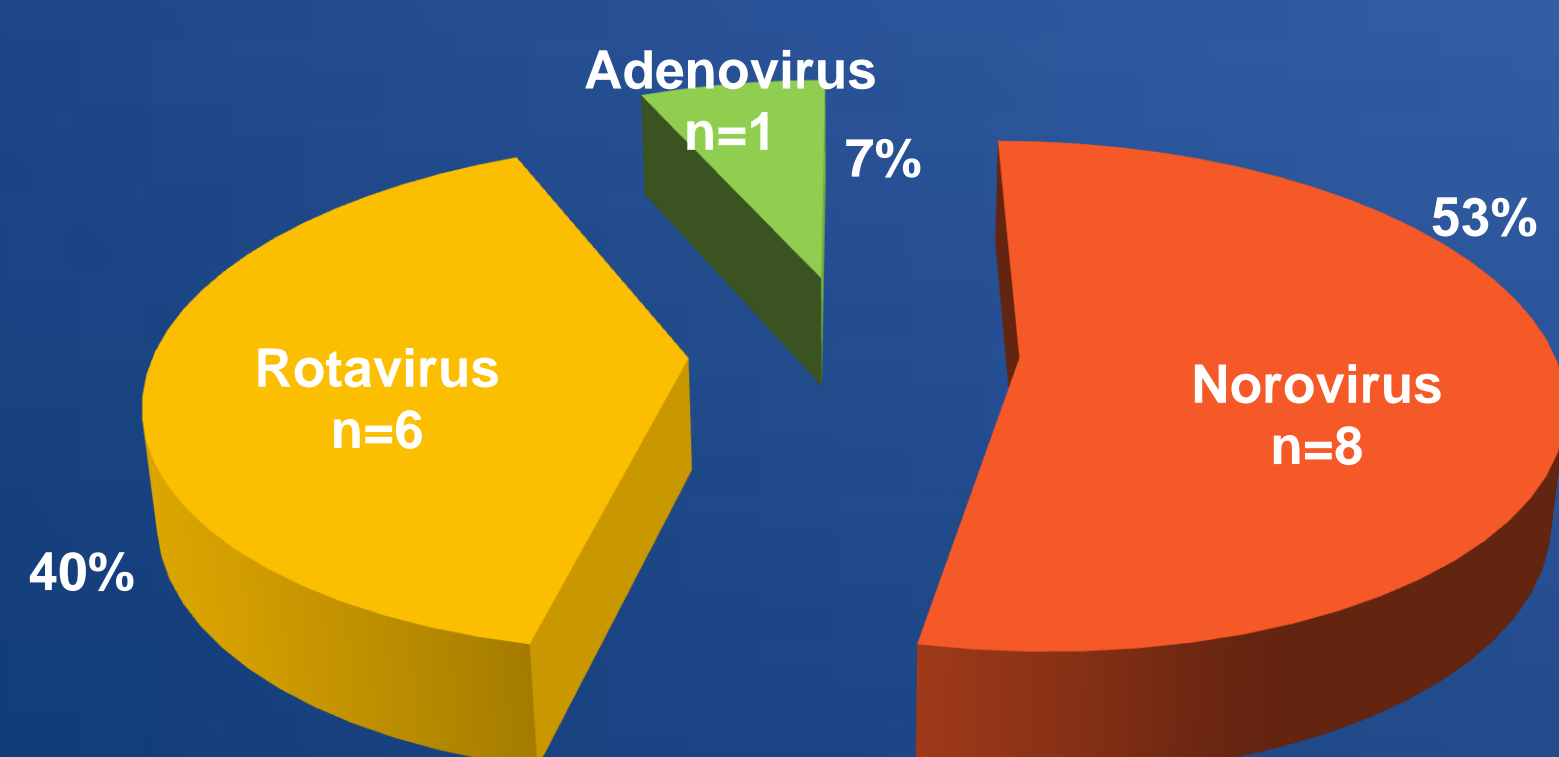


Fig. 2: Distribution enteric virus among the positive samples (n=15).

CONCLUSIONS

These preliminary results suggest that the most common viral agent associated with acute diarrhea in Portuguese children is Norovirus.

Most patients 27 (60%) were from children up to 2 years old, which confirms the high incidence of this kind of viruses on this age group's.

For 9 (20%) of the 45 children, it was not possible to identify an infectious aetiology, suggesting that other non screened agents, such as Sapovirus and other emergent agents like parechovirus, are probably implicated.

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