

**Infecção por rotavírus em paciente adulto imunocompetente em cidade do estado de São Paulo, Brasil – relato de caso**

**Rotavirus infection in immunocompetent adult patient in a city of state of São Paulo, Brazil – case report**

**Infección por rotavirus en un paciente adulto inmunocompetente en una ciudad del estado de São Paulo, Brasil - informe de un caso**

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**Resumo**

O artigo em questão tem como objetivo descrever um relato de caso de um paciente adulto imunocompetente com infecção por rotavírus, destacando os pontos a serem revistos e as condutas realizadas, a fim de incluir na rotina dos profissionais de saúde ações mais

adequadas em quadros de diarreias aguda. A pesquisa foi realizada de maneira qualitativa, com a coleta direta dos dados do paciente, descrevendo os acontecimentos de forma cronológica, visando o melhor entendimento do quadro clínico e ações médicas. A paciente apresentou quadros de diarreia líquida e cólica, com piora do quadro em 24 horas, sendo atendida em unidade de pronto atendimento e posteriormente com especialista em infectologia. Durante o período de internamento, exames de rotina, suporte hídrico e alimentar foram realizados, assim como terapia sintomática e antibioticoterapia. Os exames complementares apresentaram positividade para rotavírus em fezes, anti-HIV 1 – 2 negativos, coprocultura e pesquisa de *Clostridium difficile* negativos e presença de dilatação ceco-ascendente com líquido a tomografia computadorizada. Durante o período avaliado, foi visualizado um déficit em pontos de conduta e preocupações quanto a tomada de decisões em pacientes com doenças diarreicas agudas (DDAs) em ambiente hospitalar. Desta forma, conclui-se que alguns protocolos realizados em pacientes com DDAs, como a utilização de antibioticoterapia, devam ser acompanhados de perto, assim como, a necessidade de uma maior atenção quanto a biossegurança, além da necessidade de dados que acompanhem a ocorrência do rotavírus em pacientes adultos, que visem não apenas unidades públicas, o que porventura podem servir para alavancar metodologias preventivas.

**Palavras-chave:** Diarreia; Diarreica aguda; Doença; Prevenção; Saúde pública.

### **Abstract**

This article aims to describe a case report of an immunocompetent adult patient with rotavirus infection, highlighting the points to be reviewed and the conducts performed, in order to include in the routine of health professionals more appropriate actions in cases of diarrhea acute. The research was conducted qualitatively, with the direct collection of patient data, describing the events chronologically, aiming at a better understanding of the clinical picture and medical actions. The patient presented with diarrhea and colic, with worsening in 24 hours, being seen at the emergency room and later with specialist in infectology. Routine examinations, water and food support were performed during hospitalization, as well as symptomatic therapy and antibiotic therapy. Complementary examinations showed fecal rotavirus positivity, anti-HIV 1 - 2 negatives, co-culture and negative *Clostridium difficile* screening, and presence of liquid cecum-ascending dilation on computed tomography. During the evaluation period, a deficit in conduct points and decision-making concerns was visualized in patients with acute diarrheal diseases in a hospital environment. Thus, it is concluded that some protocols performed in ADD patients, such as the use of antibiotic

therapy, should be closely monitored, as well as the need for greater attention to biosecurity and, consequently, the risk of new infections in the environment. In addition to the need for data to accompany the occurrence of rotavirus in adult patients, which target not only public units, which may serve to leverage preventive methodologies.

**Keywords:** Diarrhea; Acute diarrhea; Disease; Prevention; Public health.

## Resumen

Este artículo tiene como objetivo describir un informe de caso de un paciente adulto inmunocompetente con infección por rotavirus, destacando los puntos a revisar y las conductas realizadas, para incluir en la rutina de los profesionales de la salud acciones más apropiadas en casos de diarrea aguda. La investigación se realizó de forma cualitativa, con la recopilación directa de datos de pacientes, describiendo los eventos cronológicamente, con el objetivo de una mejor comprensión del cuadro clínico y las acciones médicas. El paciente presentó diarrea y cólico, empeorando en 24 horas, siendo atendido en la sala de emergencias y luego con un especialista en infecología. Se realizaron exámenes de rutina, soporte de agua y alimentos durante la hospitalización, así como terapia sintomática y terapia con antibióticos. Los exámenes complementarios mostraron positividad del rotavirus fecal, negativos al HIV 1 - 2, cocultivo y detección de *Clostridium difficile* negativo, y presencia de dilatación líquida ascendente al ciego en la tomografía computarizada. Durante el período de evaluación, se visualizó un déficit en los puntos de conducta y las preocupaciones de toma de decisiones en pacientes con enfermedades diarreicas agudas en un entorno hospitalario. Por lo tanto, se concluye que algunos protocolos realizados en pacientes con DDA, como el uso de la terapia con antibióticos, deben ser monitoreados de cerca, así como la necesidad de una mayor atención a la bioseguridad y, en consecuencia, el riesgo de nuevas infecciones en el medio ambiente. Además de la necesidad de datos para acompañar la aparición de rotavirus en pacientes adultos, que se dirigen no solo a las unidades públicas, que pueden servir para aprovechar las metodologías preventivas.

**Palabras clave:** Diarrea; Diarrea aguda; Enfermedad prevención; Salud pública.

## 1. Introduction

Rotavirus is a non-enveloped double-stranded RNA virus composed of ten groups (A-J) and several genotypes, affecting mainly gastrointestinal regions, and with lower liver, pancreas and CSF frequencies (Crawford et al., 2017). Even with the noticeable reduction in the number of cases over the years (Tate et al., 2016), this virus is still recognized as one of

the most important etiological agents associated with acute diarrheal diseases (ADD) in the world (Rheingans et al., 2007; WHO, 2013; Moraes and Castro, 2014).

During 1999 and 2004, Brazil verified a significant increase in the diagnosis of rotaviruses from 7.7% to over 20% of ADD with a known etiology (State of São Paulo's Health Department, 2006) but evidence related to implementation of the vaccination protocol, has shown a decline in hospitalizations and deaths in children under five years of age in the country from 2007-2009 (Carmo et al., 2011).

Despite its high prevalence, morbidity and mortality in children, rotaviruses can occur at any age (Anderson and Weber, 2004; Façanha and Pinheiro, 2005; WHO, 2013), however, adult infections are often underestimated (Anderson and Weber, 2004) or possibly underreported (Façanha and Pinheiro, 2005). Associated with this fact, the non-obligatory reporting of rotavirus conditions in adults, or visits to non-sentinel health posts (BRASIL, 2019), in addition to home treatment and self-limiting character of diarrhea, may favor the concealment of actual numbers (Façanha and Pinheiro, 2005; Rheingans et al., 2007; Portela et al., 2013). Rotavirus-infected people are proven to be able to release thousands of viral particles in the stool, and outbreaks are not uncommon as only a few particles are required for infection to occur (Crawford et al., 2017). Poorer locations, with poor sanitation or health education, are closely linked to various epidemics, since the main form of spread is via the fecal-oral route (Anderson and Weber, 2004).

Due to the high importance of rotavirus in population health, its epidemic potential, morbidity, and lethality (Parashar et al., 2003; Rheingans et al., 2007; Parashar et al., 2009) and zoonotic character (Cook et al., 2004), it is of fundamental interest from the social, economic and health aspects, the precise identification of the pathogenesis in ADD, thus attracting attention to immunocompetent adult patients, reducing possible costs with unnecessary treatments and risks of viral spread through health prevention.

Thus, this article aims to describe a case report of an immunocompetent adult patient positive for rotavirus, with the purpose of inducing greater attention to patients in this group, as well as the inclusion of more appropriate measures in ADD, such as better biosecurity measures and patient care.

## **2. Methodology**

This case study was conducted in a qualitative manner (Pereira et al., 2018), by direct collection of patient data through access to medical records and examinations provided by them, being presented chronologically for a better understanding of the clinical picture. Data were collected after the patient's diagnosis for rotavirus and the reduced visualization of biosecurity measures and attention to regarding questions related to the of infections in both hospital and home environments. Thus, the patient data were evaluated, as well as the conducts performed in the public and private care units. The laboratories, care units and professionals were not identified to preserve the institutions.

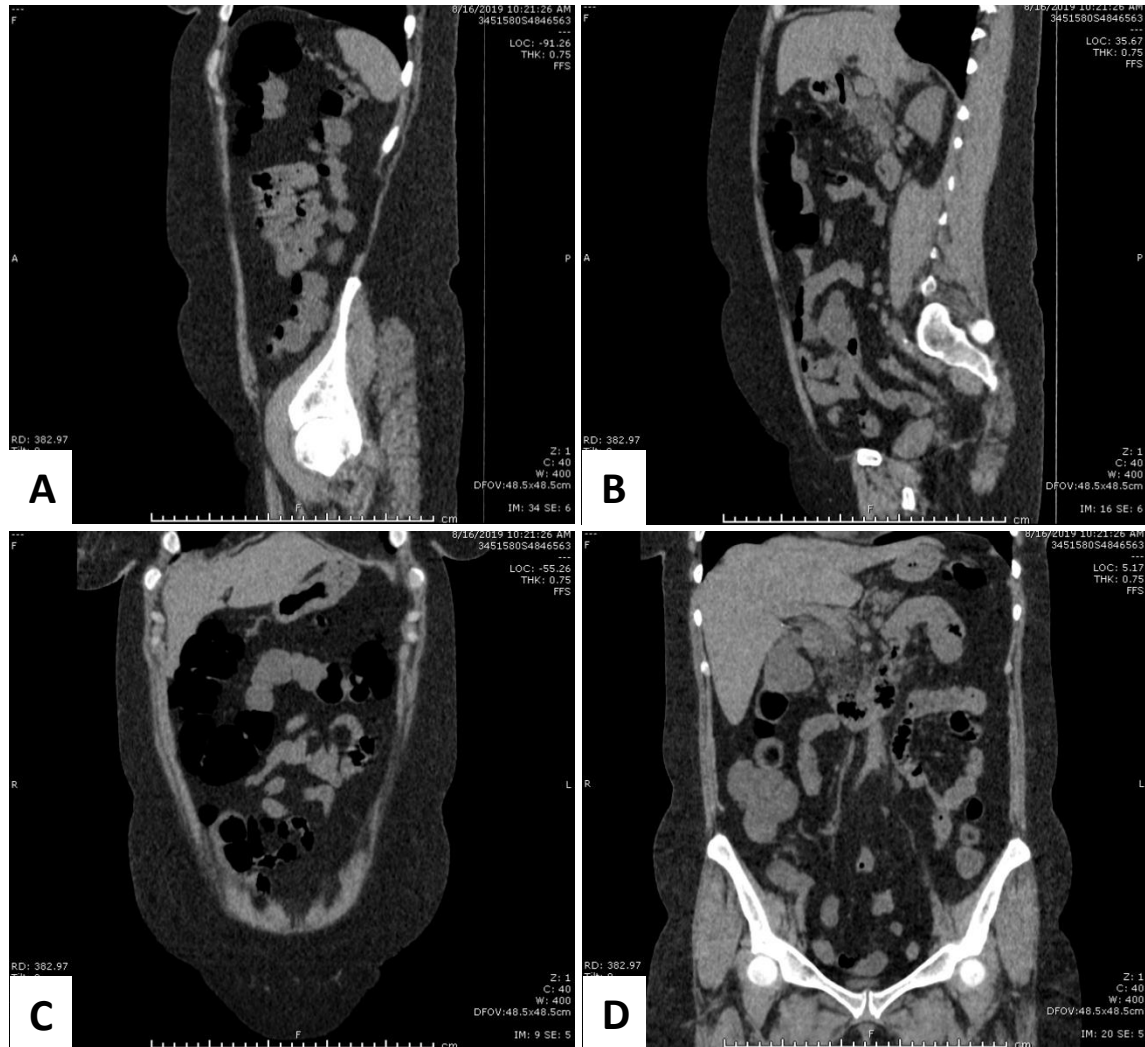
### 3. Case report

Female patient, 51 years old, born and resident in Franca/SP, Brazil, nursing technician, middle class with no history of pre-existing illnesses, presented with diarrhea without mucus or blood and abdominal pain. However, after the 24-hour period of the initial symptoms, the patient presented with colic worsening and the presence of continuous diarrhea and mucoid, being treated in the immediate private care of the city, with IV administration of scopolamine butylbromide and omeprazole, associated with fluid therapy. Blood count was requested (data not shown), CRP (0.78 mg / dL), potassium (3.43 mEq / L) and released after the prescription of water and food support. Forty-eight hours after symptom onset, the patient turned to a private infectious specialist for immediate hospitalization during 72 hours, due to worsening of primary complaints and dehydration (15 Glasgow), who underwent fluid therapy (Ringer lactate, 1l/12h) and use of scopolamine butylbromide and antibiotic therapy (ciprofloxacin hydrochloride 200 mg / SID).

New blood count was realized (data not shown), serological tests with normality parameter for C-reactive protein (0.55 mg/dL), creatinine (0.50 mg/dL), oxalacetic glutamic transaminase (24.0 U/L), pyruvic glutamic transaminase (30 U/L), alkaline phosphatase (61 U/L), gamma glutamyl transferase (18 U/L), total amylase (29 U/L) both within the normal range. Among the tests that presented below the reference values were urea (13 mg/dL), total proteins (4.5 mg/dL), albumin (3.1 mg/dL), globulins (1.4 mg/dL), characterizing dehydration.

Complementary examinations were positive for fecal rotavirus screening, negative anti-HIV 1 - 2 antibody screening, 48-hour growth-free coproculture, negative *Clostridium difficile* screening, normal face and chest radiography, abdomen tomography identified fluid-ascending dilation (8UH) (Figure 1) and other structures within the normal range.

**Figure 1:** Computed tomography of total abdomen from the highest phrenic dome to the lower edge of the hospitalized patient's pubis (72 hours) demonstrating dilation activity in cecum-ascending fluid inside (8 UH).



**Legend:** A and B - lateral section with presence of liquids in ascending and transverse region. C and D - Sagittal section of ileocecal region with presence of fluid inside. Other structures, bones and soft tissues without imaging changes.

One hundred and twenty hours after the onset of the condition, the drug protocol was modified with the removal of ciprofloxacin hydrochloride 200 mg (BID) and continued hydration during the hospitalization period. On the current day the patient was released due to the presentation of pasty stools tending to normal, without food restriction, suggested light diet and prescription of nitazoxanide 500 mg (BID / 3 days), bromopride 10 mg (TID), Tropinal ® (BID), and pantoprazole 40 mg (SID) plus free isotonic fluid replacement. Next day after discharge, the patient had no additional complaints.

#### 4. Discussion

The decline of studies on infectious diseases in recent years is currently a line of clinical reasoning often directed almost entirely to neoplastic and autoimmune diseases, especially gastroenterology (Moraes and Castro, 2014). In contrast, ADDs have a high occurrence and a range of etiologies, such as bacterial, viral, parasitic and non-infectious (Porcy et al., 2013; Moraes and Castro, 2014). The implementation of sentinel surveillance format acute diarrheal disease monitoring programs (BRASIL, 2012) has promoted estimates of the incidence of ADD and detection of outbreaks and epidemics by food and waterborne diseases (State of São Paulo's Health Department, 2006). Although there was a 17% reduction in hospitalizations for diarrhea from 2007 to 2009 in the country (Carmo et al., 2011), an increase of more than triple ADD notifications was observed in the region of Franca-SP between the period 2007 and 2018 (Ministry of Health, 2019), thus bringing a greater focus to health prevention and diagnosis in the study region.

Rotaviruses in adult patients are more likely to develop asymptomatic infections and may only increase antibody titre (Stuempfig and Seroy, 2019). Anamnesis and epidemiological data are essential for the diagnosis of the disease (Moraes and Castro, 2014), and symptomatic conditions may present electrolyte disturbances consistent with dehydration, mild and diffuse thickening of the colon wall or inflammatory alterations visualized by tomography (Stuempfig and Seroy, 2019), as observed in the patient exams.

The release of patients without due diagnostic certainty of ADD may lead to worsening of the condition and possible death. Complementary examinations, such as radiographs and cultures, may be used to rule out other diseases, such as upper respiratory viral diseases, bacterial pneumonia, and protozoal infections, which may have symptoms similar to viral gastroenteritis (Stuempfig and Seroy, 2019), thus the conduct of requesting complementary exams can and should be performed to rule out other diseases.

Specific therapies for the treatment of rotavirus are not yet available, and the pillars are symptomatic support, hydric (Salvador et al., 2011; WHO, 2013; Stuempfig and Seroy, 2019) and some cases the use of antivirals and antiemetics (Crawford et al., 2017). Although bacterial agents are usually associated with more severe diarrhea in adults, only 1 to 5% of patients would require antibiotic therapy (Moraes and Castro, 2014). The use of ciprofloxacin hydrochloride for this patient could have been reduced, or nonexistent, as the use of antibiotics in rotaviruses is not always recommended (Eduardo and Timenetsky, 2009;

Moraes and Castro, 2014). Associated with this, the fact that negative co-culture and positive rotavirus research on the day of its prescription could reduce treatment costs and risk of acquisition of antimicrobial resistance by microorganisms in nosocomial environment.

Despite being formed in the health area, the patient was not during the period, performing her function, so the predispositions normally associated with rotavirus infections, such as trips to endemic areas, epidemiological outbreaks, work in the environment. reclude, communicators of sick children, the elderly, or people with diseases with immunodeficiency (Anderson and Weber, 2004) did not fit their condition, and the probable source of infection was not identified. However, the identification of photites, water, food and respiratory secretions in rotavirus transmission, in addition to the normally reported, fecal-oral (Ansari et al., 1991; Butz, 1993), favors the virus a high transmissibility. However, basic health measures such as hand washing, 70% ethanol use, patient isolation, individual protection equipment use, and health education for staff and family members in hospital settings can reduce the risk of nosocomial outbreaks and infections (Anderson and Weber, 2004; American Academy of Pediatrics, 2015; Junior, et al. 2020). However, these key points of prevention have not been passed on to the patient, which should not be ignored by health professionals.

Notification and monitoring programs in online platforms, sentinel surveillance system, can characterize or broaden the epidemiological knowledge of acute diarrhea, making prevention and control actions have greater impact (Façanha and Pinheiro, 2005; BRASIL, 2019). The main sources of care information come from public units, where most of them consist of a population with lower purchasing power (Façanha and Pinheiro, 2005), thus, such data may highlight a possible convergence for a poorer population, however, the lack of uniformity and limitations found regarding health services data (Bittencourt et al., 2002), associated with the self-limiting character of diarrhea, underreporting and care in private units, may limit the care evaluations, since, diarrhea may have a high incidence in all regions of a city and at different economic levels (Façanha and Pinheiro, 2005).

## **5. Final considerations**

Patients with ADDs become possible sources of information within health programs, favoring the emergence of integrative mechanisms through the evaluation of factors such as geographic, health or economic, for example. Thus, preventive methodologies that encompass various factors can benefit the emergence of health actions with greater impacts.



Unfortunately, as seen during patient care and hospitalization, there is still a deficit of concern from the points highlighted above, believing that protocol revision is necessary for greater attention in decision-making in ADD patients, especially in a hospital setting. Further studies revealing the true prevalence of rotavirus in adult patients, not just in public health facilities, as well as analyzing improvements in the treatment, control and follow-up of these patients, can serve as models for the improvement and standardization of health programs, as well as perhaps presenting relevant data on prevalence in this age group.

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