

NEONATAL *CAMPYLOBACTER COLI* HEMORRHAGIC ENTERITIS AND BACTERAEMIA

Fernando Ruiz-Esquide¹; Mónica Lafourcade²; Edilia Andrews³; Heriberto Fernández^{4*}

¹Unit of Neonatology, Department of Pediatrics and Infantile Surgery, Facultad de Medicina, Universidad de Chile, Campus Occidente, Santiago, Chile. ²Unit of Microbiology, Clinical Laboratory, Hospital San Juan de Dios, Santiago, Chile.

³Department of Microbiology, Universidad de Concepción, Concepción, Chile.

⁴Institute of Clinical Microbiology, Universidad Austral de Chile, Valdivia, Chile.

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SHORT COMMUNICATION

ABSTRACT

A case of neonatal campylobacteriosis with hemorrhagic enteritis and bacteraemia due to *Campylobacter coli* is presented. The mother, from a rural area, had three febrile self-limited diarrheic episodes during pregnancy. The neonate probably acquired the infection during labor. The newborn's serum showed high levels of specific immunoglobulins which could explain the scarce symptoms in this newborn, despite the delay in establishing the gentamicin therapy.

Key words: *Campylobacter coli*, campylobacteriosis, hemorrhagic enteritis, bacteraemia, newborn.

Campylobacter jejuni subsp. *jejuni* and *C. coli* are zoonotic bacteria recognized as the most frequent causes of infectious diarrhea in both developed and developing countries (2,4). The clinical spectrum of intestinal campylobacteriosis varies from a mild diarrhea to a severe enterocolitis, with or without other internal organs being involved (12). Despite their high frequency as an agent of diarrhea, the isolation of *Campylobacter* from blood is uncommon, and blood culture/stool culture isolation rate is 0.008 (9). Campylobacteriosis of newborns, either transplacental or neonatal, is not a well known clinical entity. A case of neonatal transient bacteraemia with hemorrhagic enteritis due to *C. coli* is reported here.

A male newborn with a gestational age of 39 weeks and a weight of 3,420 g was delivered by spontaneous labor. The amniotic fluid was clear. Apgar score was 9 at 1 and 5 min. After a normal transition period, the newborn was only on a breast milk diet. Thirty-six hours following delivery there was a sudden change in faeces with the presence of fresh blood and mucous. Good general condition was observed, with no fever or vomiting, but there was a mild abdominal distension. Clinical examination

showed no intestinal masses or anal injuries. Suspension of oral feeding, fleboclisis and some laboratory tests were indicated. Standard laboratory tests were normal and meningeal infection was ruled out. No antibiotics were given until the 5th day of admission, when a Gram negative curved rod, with a morphology suggestive of *Campylobacter* was isolated from both stool and blood culture. Gentamicin, 4.0 mg/Kg. every 24h for 7 days was prescribed. During the treatment, the newborn remained in fairly good condition and exhibited a progressive normalization of faeces. Breast feeding was restarted, and the patient was discharged after 12 days. Examination by abdominal X-rays showed a normal distribution of air, an absence of pneumatosis or hydroaereal levels. Abdominal echotomography ruled out intestinal invagination. Rectum-sigmoidoscopy revealed a pink mucosa without injuries. Two blood cultures (BactT/Alert medium) as well as stool cultures for classical enteropathogens and *Campylobacter* sp. were performed. No classical enteropathogenic bacteria were isolated. A Gram negative curved rod was isolated from cultures on Skirrow's medium (10), at 42°C under microaerophilic atmosphere. The

*Corresponding author: Institute of Clinical Microbiology, Universidad Austral de Chile. PO Box 567. Valdivia, Chile. Tel.: (+5663) 29-3300. E-mail: hfernand@uach.cl

isolates were oxidase and catalase positive and presumptively identified as *Campylobacter* sp. Using the APICampy system and Lior's biotyping method (7) the isolates were classified as *Campylobacter coli* biotype II. For both strains the results of the identification, biotyping, antibiotic susceptibilities (E-test method), adherence, invasiveness, enterotoxigenicity and cytolethal distending toxin (CDT) (3) were the same (Table 1). Also the agglutination titers obtained challenging the mother's and the patient's sera with the strains were identical and are shown in Table 1. Serum immunoglobulins in the mother and child were determined and gave the following results in mg/dL: *Mother*: IgG 1537; IgA 242; IgM 190. *Child*: IgG 498; IgA 39; IgM 72. Determination of specific IgG and IgM for *Campylobacter* in both sera were done using an ELISA technique. The optical density reading for IgG was 1.249 for the mother's serum and 0.236 for the child's serum. The negative control was 0.059. The readings for IgM were of 2.95 for the mother, 0.111 for the child and 0.07 for the negative control.

These findings led us to search for more epidemiological information. The mother was living the first seven months of the pregnancy in Isla Huapi, a rural area near Valdivia, Chile (39° 47' Southern latitude). There were no basic environmental sanitary conditions and there was a high risk of zoonosis. During this period, she had three febrile, self limited diarrheic episodes. The epidemiological data, the microbiological results, the presence of high rates of anti *Campylobacter* IgG serum antibodies, the fact that the newborn was only breast fed as well as the fact that the mother presented a high titer of

agglutinins when her serum was challenged with the isolated strains, leads us to concluded that this case corresponds to a mother-to-child transmission. Most of the neonatal campylobacteriosis cases correspond to neonates born to mothers who had *Campylobacter* diarrhea during the peripartum period (8,9,11). In this case, the bacterium was acquired during labor and this is the first documented description of a mother-to-child transmitted *C. coli* infection in Chile, and probably in South America. Perinatal transmission of *Campylobacter* has been reported in industrialized nations (1,11). However, in developing countries little is known, despite abortion due to *C. jejuni* have been reported (8).

The main symptom of this patient was a hemorrhagic enteritis, a symptom common in campylobacteriosis in milk fed babies, but not in newborns. In the latter, bacteraemia complicated with meningitis seems to be a common occurrence (1). In this case, the high agglutination titers (1:250) found in the mother's and child's sera corroborate the mother-to-child transmission. This newborn developed an hemorrhagic enteritis and a consequent bacteraemia. This clinical expression as well as the lack of invasion of other parenchyma, despite the relative delay in starting antimicrobial treatment, could be related to the high levels of immunoglobulins which were found. It must be taken into account that the mother had three self limited diarrheic episodes which may have allowed the development of the specific immune condition reported here. The passive transmission of the antibodies may have helped to prevent a wide spread dissemination of the bacteria, which in premature babies and neonates can cause severe damage due to vasculitis at the meningeal level or in other parenchyma (1,8,11). Breast feeding during the whole hospitalization period, may have allowed the newborn to acquire enough specific secretory IgA to minimize the bacteria pathogenic properties, also contributing to limit local hemorrhaging and bacteraemia. We did not have the opportunity to measure colostrum IgA levels, but the serum concentration (242 mg/dL) suggests that there was an active local secretory response. The specific IgM immunoglobulins titers of the newborn give grounds to believe that this was a recently acquired infection and that a great part of the IgG titer reflects a passive transmission. On the other hand, the strains showed both adherence and invasive capacity and CDT production which suggests that these virulence factors could explain the hemorrhagic enteritis and the consequent bacteremia (5).

Following the positive culture results, the child was treated with gentamicin for one week starting from the 5th day of hospitalization. Septicaemia is the predominant criterion for the administration of this antibiotic. Erythromycin should be used only for intestinal infections. Both strains were susceptible to both antimicrobial drugs.

The diagnosis of neonatal campylobacteriosis is difficult and probably underestimated. In addition, with routine microbiological methods the isolation from blood samples is

Table 1. Characteristics of the *Campylobacter coli* strains isolated from the blood and stool cultures of the newborn.

CHARACTERISTIC	STRAIN 1 (blood culture)	STRAIN 2 (stool culture)
SPECIES	<i>C. coli</i>	<i>C. coli</i>
BIOTYPE	II	II
SUSCEPTIBILITY TO:		
Gentamicin	0.064	0.064
Tetracycline	0.064	0.064
Ciprofloxacin	0.008	0.008
Erythromycin	0.049	0.049
Ampicillin	0.50	0.50
Cloramphenicol	0.38	0.38
VIRULENCE FACTORS:		
Adherence	+	+
Invasiveness	+	+
CDT	+	+
Enterotoxigenicity	-	-
AGGLUTINATION TITERS:		
with new borns serum	1:250	1:250
with mothers serum	1:250	1:250

quite unusual. In this case, the use of the BactT/Alert system allowed the isolation of *C. coli*, showing that it is effective for the diagnosis of *Campylobacter* bacteraemia as was previously demonstrated by Schonheyder et al (9).

Finally, we must bear in mind that perinatal infection, one of the manifestations of this zoonosis, must be considered for weakened patients and in all milk fed babies carrying an enteric condition, especially in those coming from rural areas with poor or deficient basic environmental sanitary conditions (12).

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RESUMO

Enterite hemorrágica e bacteremia neonatal produzida por *Campylobacter coli*

Um caso de campylobacteriose neonatal com enterite hemorrágica e bacteremia produzido por *Campylobacter coli* é apresentado. A mãe, proveniente de uma região rural, apresentou durante a gravidez, três episódios de diarreia autolimitada. A infecção no recém nascido provavelmente foi adquirida durante o parto. Os altos níveis séricos de imunoglobulinas específicas poderiam explicar a escassa sintomatologia, apesar da demorada prescrição do tratamento com gentamicina.

Palavras-Chave: *Campylobacter coli*, campylobacteriosis, enterite hemorrágica, bacteraemia, recém-nascido.

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