CLINICAL SCORES IN VIRAL DIARRHEA - LIMITS AND PERSPECTIVES

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Abstract

Although there are few studies referring to clinical symptoms in viral diarrhea (Gimenez et al 2008, Lorrot et al 2011, Zhang et al 2011), in terms of the development of predictive scores of viral etiology, the works are missing.

In the specialty works there are only 2 scores for establishing the gravity of the viral diarrhea – the modified Vesikari score and the Clark score, both of them failing to be used in the prediction of viral etiology of diarrhea (Givon-Lavy et al 2008, Freedman et al 2010, Stojkovska et al 2013).

Drafting a score of early detection of the viral etiology of acute diarrhea in children would fill a niche in the research of this disease, located on the border of interest of multiple specialties – pediatrics, laboratory medicine, family medicine, infectious diseases and gastroenterology, with the possibility of a rapid diagnostic approach and an appropriate therapeutic stance.

Key words: viral diarrhea, child, clinical scores

Introduction

Viral diarrhea is a common cause of morbidity regarding children. It is produced mainly by Rotavirus and Norovirus.

Unfortunately, in Romania the confirmation of viral etiology has not been introduced in the routine practice, that's why many children with diarrhea are being over-diagnosed with bacterial diarrhea, being treated unnecessarily with antibiotics.

The incidence of viral diarrhea is not known in Romania. Current studies show restricted groups for small geographical areas- Bucuresti -Ulmeanu 2009 (15), Lesanu 2013 (10), Cisnadie -Sârbu 2009 (13). Most studies relate to Rotavirus; Norovirus studies have not been reported in Romania. Although there are some studies regarding clinical predictors in viral diarrhea -Gimenez et al 2008 (7), Lorrot et al 2011 (11), Zhang et al 2011(19),as far as the development of viral etiology prediction scores are concerned, the specialty works are missing.

Concerning the bacterial diarrhea, the situation is happier. Since the 1980s the literature is replete with articles whose objectives include the discovery of clinical-laboratory association with high sensitivity and specificity for bacterial infection in acute diarrhea.

Velasco Cerrudo (16) tries in 1992 a score of practical use:

- Score 13-17 – high prediction (posibile bacterial);
- Score 9-12 – moderate prediction;
- Score < 12 – low prediction (unlikely bacterial).

Fontana score for predicting the bacterial etiology in acute diarrhea in childhood (5).

Parameter	Score	
	(+)	(-)
Fever> 38,5˚C	3	1
Vomiting	2	3
Blood in stool	4	1
Mucus in stool	7	2

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Velasco Cerrudo score (16)

Parameter	Score	
	(+)	(-)
Fever>38⁰ C	**8**	**0**
Mucus	**8**	**0**
Blood in stool	**8**	**0**
PMN in stool	**7**	**0**

It is considerd that a score over 20 points is predictive for bacterial etiology. This score is similar to the score imagined by Fontana (3 common variables: fever, mucus, blood) but in association with the obligatory coprocitograma, a factor which Fontana added later in his study in order to correct the result.

Since 1996, the researchers' main concern is to introduce the biological tests in order to improve the sensitivity and specificity of predictive factors for bacterial etiology.

In 1996 Borgnolo (1) introduce C-reactive protein as a useful parameter in the positive diagnosis of acute bacterial diarrhea and Huicho (9) addresses in 1997 the role of fecal lactoferin.

Since 2005, in the American literature one can find two interesting articles on this topic: Denno(4) found out the association of abdominal pain, stools >5/day, fecal blood, fecal polymorphonuclears and Vernacchio(18) detected in 2006 on a sample of 604 children only two predictors (vomiting and more than 16 stools/ day).

What is the situation with viral predictors of acute diarrhea for children?

Rodrigues Cervilla 1996 (12) highlights the positive predictive factors for viral diarrhea: fever, vomiting, intravenous rehydration, respiratory signs, cold season.

There are only two scores in the literature for determining the severity of viral diarrhea: the modified Vesikari score (Vesikari 1990)(17) and the Clark score (Clark 1988) (2,3), but they can not be used in predicting viral etiology of diarrhea -Givon-Lavy et al 2008 (6), Freedman et al (8), 2010, Stojkovska et al 2013 (14).

Clark score 1988 (2,3):
Maximum score 24 points
2-8 – mild forms
9-16 – media forms
17-24 – severe forms

Clark score 1988 (2,3)

Parameter	1	2	3
Diarrhea Stools/day	**2-4**	**5-7**	**Over 7**
Duration of diarrhea	**1-4**	**5-7**	**Over 7**
Vomiting/day	**1-3**	**4-6**	**Over 6**
Duration of vomiting 1-4	**2**	**3-5**	**Over 5**
Rectal temperature	**38-38,2**	**38,3-38,7**	**Over 38,8**
Duration of temperature	**1-2**	**3-4**	**Over 5**
Behavioral changes	**Irritable//does not play anymore**	**Lethargic**	**Seizures**
Length changes(days)	**1-2**	**3-4**	**Over 5**

Vesikari Score(17)

Parameter	1	2	3
Diarrhea Number of stools/ day	1-3	4-5	≥6
Duration of diarrhea	1-4	5	≥6
Vomiting- number/day	1-2	3-4	≥5
Duration of vomiting	1	2	≥3
Rectal temperature	37,1-38,4	38,5-38,9	Over 39
Dehydration	without	1-5%	Over 6%
Treatment	Rehydration	Hospitalization	

Maximum score 20
<7 mild forms
7-10 medium forms
≥11-20 severe forms
*Table adapted from rotavirus clinical trials using the Vesikari clinical severity scoring system (Ruuska&Vesikari, 1990).

Givon-Levi (8) compares the 2 scores in 2008, and there are considerable differences in identifying severe forms of viral-acute diarrhea in children:Vesikari score is more sensible and specific for this forms. Stojkovska and contributors (14) in 2013 confirm the same thing about Vesikari score versus Clark score.

Then why are they useful? Are they relevant in family medicine practice? Yes, they are useful, not for prospective study, but retrospective, for quantification efficiency in antiRotavirus vaccine.

After introducing bovine antiRotavirus vaccine, in 1986 (18), Vesikari noticed a decrease, not necessarily of incidence, but of severe forms, respectively lethal forms of Rotaviruses.

Also, this score is retrospectively useful for tracing the etiology because Lorrot 2011 (11), in a study of 2 years in France, observed that Vesikari score may be used in another type of diarrhea, the one with Norovirus, but in general the score is higher in forms with Rotavirus.

The development of precocious screening score of viral etiology in acute diarrhea at child will fill up a niche of searching this pathology, which concerned many specialties - Pediatrics, Family Medicine, Laboratory Medicine, Infectious Disease and Gastroenterology.

To remember in medical practice

The onset with high fever, tenesmus or abdominal pain and diarrheal stools with pathological elements with mucus, pus and   blood, orientate to a bacterial etiology.The chronology of bacterial diarrhea includes general modified condition, fever, pain, diarrheal stools initial aqueous, after that with pathological elements and optional vomiting. Hydration condition is good in general or at the limit, but the aspect is dominated by septic condition.

The onset with moderate fever, frequent vomiting which are followed by diarrhea, abdominal pain and aqueous diarrheal stools orientates to a viral etiology. Clinical aspect is dominated by acute dehydration. The chronology of viral diarrhea is vomiting, moderate fever, then abdominal pain and diarrheal stools with fast dehydration.

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