

Rapid detection of rotavirus in children: comparison of Vikia[®] Rota-Adeno and Diarlex[®] MB, two immunochromatographic tests

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Abstract

Purpose: The purpose of this study was to compare two immunochromatographic tests: Vikia Rota-Adeno (bioMérieux, France) and Diarlex MB, with centrifugation (Orion Diagnostica), used in rotavirus detection in the case of gastroenteritis episodes in pediatrics.

Methods: 189 stool samples in total were tested: 116 frozen stools (-20°C) studied retrospectively and 73 fresh stools studied prospectively (December 2004-August 2005). Of the frozen stools, 50 were selected as containing bacteria or yeasts responsible for diarrhea and 45 were selected as containing rotavirus using the laboratory's routine method (Diarlex MB). For all the stools, the rapid tests were performed on the same day under the same conditions at Hôpital Debrousse and the reference method IDEIA rotavirus (Dako) was performed in blind mode by bioMérieux.

Results: On the frozen stools, Vikia produced the same results as the reference method and Diarlex MB produced two false negative results. On the fresh stools, Vikia produced two non-interpretable results and two false negatives, and Diarlex MB produced two non-interpretable results and two false negatives. For three frozen stools, Vikia posed methodological problems associated with the migration on the strip which were resolved in a second assay. On the 50 frozen stools containing bacteria or yeasts, no cross-reaction was detected with the two tests. For the 189 stools, the reference method, Vikia, and Diarlex MB detected 81, 79 and 76 stools positive for rotavirus. The sensitivity and specificity values, positive predictive value and negative predictive value are 97.5; 100; 100 and 98.2% for the Vikia test and 95; 100; 100; and 96.4% for the Diarlex MB test, respectively. No statistically significant difference was observed either between the two tests themselves or between the tests and the reference method.

Conclusion: Equal in terms of performance, the Vikia test offers a simpler and more rapid methodology.

Introduction

Rotavirus is the major cause of gastroenteritis in infants and young children all over the world. Rotaviral diarrhea evolves into an epidemic and may be severe, resulting in dehydration and disturbance of the body's electrolyte balance. Diagnosis by detecting rotavirus cell using electron microscopy is possible only in reference laboratories which explain why immunological methods are widely used in clinical laboratories. Rapid diagnosis of infection enables inadequate antibiotic treatment to be avoided and the infected patients to be rapidly isolated.

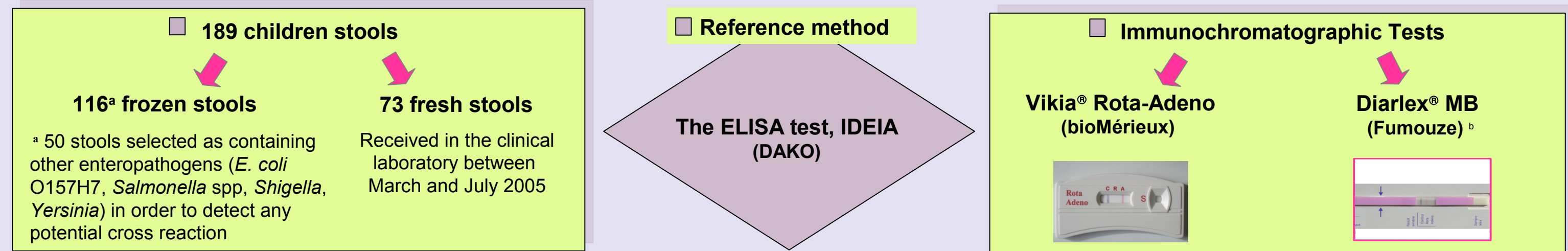
In this study, a new marketed immuno-chromatographic test: Vikia Rota-Adeno (bioMérieux, France) is compared both to an other immunochromatographic test Diarlex MB (Orion Diagnostica) and to an ELISA test (IDEA rotavirus from Dako) for the detection of rotavirus group A in stools.

References

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Bon F, J. Kaplon, E. Kohli, M.H. Metzger, P. Pothier. 2004. Evaluation de 6 tests de détection rapide de Rotavirus du groupe A dans les selles par immunochromatographie. Réunion Interdisciplinaire de Chimiothérapie Anti-Infectieuse RICAI, Paris, décembre 2004.

Material and method



The two immunochromatographic tests were performed in the clinical laboratory of the Debrousse hospital. The ELISA test, IDEIA from DAKO, considered as the reference method was blindly performed by bioMérieux laboratory.

^bTest Diarlex MB with centrifugation was chosen since it was recognized as the most sensitive and most specific test presently marketed.

Results

As results obtained either with frozen stools (n = 116) or with fresh stools (n = 73) were concordant, these results were gathered (n = 189) and reported in Tables 1, 2 and 3.

Table 1. Comparison of Vikia Rota-Adeno to IDEIA with 189 stool samples.

		IDEIA		TOTAL
		+	-	
Vikia Rota-adeno	+	80	0	80
	-	1	106	107
	ND*	0	2	2
TOTAL		81	108	189

*ND = non determined

Table 2. Comparison of Diarlex MB to IDEIA with 189 stool samples.

		IDEIA		TOTAL
		+	-	
Diarlex MB	+	77	0	77
	-	3	107	110
	ND*	1	1	2
TOTAL		81	108	189

*ND = non determined

Table 3. Sensitivity, specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV) of the two tests evaluated with 189 stools

	Vikia Rota-Adeno	Diarlex MB
Sensitivity (%)	98.8	96.3
Specificity (%)	100	100
PPV (%)	100	100
NPV (%)	99.1	97.3

Conclusion

Equal in term of performance to the Diarlex MB test, the Vikia Rota-Adeno test offers a simpler and more rapid methodology.

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