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Scientific letter

Valuation of a commercialized RT-PCR kit for the diagnosis of infection caused by the measles virus☆

Valoración de un kit comercializado de RT-PCR para el diagnóstico de la infección por el virus del sarampión

Measles, a notifiable disease for which vaccination is available,[1] is the target of a plan for elimination in Spain.[2] In Spain, measles is no longer a paediatric disease, giving rise to outbreaks, often of imported origin, that increasingly affect adults.[3] Despite the disruption of continued endemic transmission, the incidence of the infection in Europe has increased in recent years, associated with decreases in vaccine coverage.[4] Clinical suspicion, based on the presence of maculopapular exanthema accompanied by cough, rhinitis and or conjunctivitis, requires laboratory confirmation.[1,2] Serological diagnosis by specific IgM detection is difficult in previously immunised subjects, who may have false negative results, and its use is supplemented with molecular amplification techniques by reverse transcription-polymerase chain reaction (RT-PCR).[5] The Laboratorio de Referencia e Investigación en Enfermedades Víricas Inmunoprevenibles del Centro Nacional de Microbiología [Reference and Research Laboratory for Vaccine-Preventable Viral Diseases of the Spanish National Microbiology Centre] (LRIEVI-CNM) has a conventional (non real-time) multiple RT-PCR technique that enables simultaneous detection of the measles, rubella and parvovirus B19 viruses.[6,7] Although some real-time RT-PCR techniques for measles are available on the market,[8] there is little information on the usefulness of new kits. The objective of this study was to evaluate the performance of a real-time RT-PCR kit (Measles Virus Real Time RT-PCR Kit, Shanghai ZJ Bio-Tech Co.) for the diagnosis of measles virus infection. A total of 250 pharyngeal exudate samples, collected from patients with suspected measles and received at the Laboratorio Regional de Salud Pública [Regional Public Health Laboratory] (LRSP) in the Autonomous Community of Madrid between 2012 and 2019, were processed. All samples were tested using the Measles Virus Real Time RT-PCR Kit and the reference method for RT-PCR of the LRSP/CNM.[6,7] Separate extractions of nucleic acids were performed for use in the RT-PCR technique evaluated and in the reference technique. For the extraction in the Measles Virus Real Time RT-PCR Kit technique, the Qiagen EZ1 instrument was used in combination with EZ1 kits (Qiagen GmbH). For each sample, the initial volume was 200 μl, and, after completing the extraction process, 5 μl of RNA were added to 20 μl of the master mix (for a final volume for the RT-PCR reaction of 25 μl). The extraction for the multiple conventional RT-PCR reference technique used the QIAsymphony DSP Virus/Pathogen Midi Kit (Qiagen GmbH), a sample volume of 400 μl and elution volume of 40 μl, 72 samples tested positive using the reference method, and 57 of them also tested positive using the technique evaluated. Among the 188 samples that tested negative using the reference procedure, 187 (10 of which were positive for parvovirus B19 and two of which were positive for rubella) also tested negative using the Measles Virus Real Time RT-PCR Kit. Table 1 shows the sensitivity and specificity results for the technique studied, expressed in terms of percentages and corresponding 95% confidence intervals (95% CI). Despite being included in the systematic vaccination schedule, measles causes sporadic outbreaks.[9] In the context of the Plan Nacional de Eliminación del Sarampión [Spanish National Plan for the Elimination of Measles], it has been deemed necessary to quickly identify all suspected cases with high specificity criteria.[2] One limitation of this study lies in the fact that the samples were not processed using the technique evaluated and the reference technique based on the same elution. This may have led to differences that could not be ascribed to RT-PCR and might have actually resulted from extraction failures. The real-time RT-PCR technique assessed in this study is simple, and it has a high specificity and acceptable sensitivity. The number of false negatives for this commercial technique may have repercussions for its clinical application, especially given the highly contagious nature of measles. However, it may be suitable for confirming suspected cases quickly, provided that negative cases are investigated using a definitive method with higher sensitivity, such as the LRIEVI-CNM technique used in this study.

Table 1
Performance of Measles Virus Real Time RT-PCR Kit for diagnosis of measles virus infection.

	Sensitivity			Specificity		
	n	%	95% CI	n	%	95% CI
Total	57/62	91.9	81.5–97.0	187/188	99.5	96.6–100

Conflicts of interest

The authors declare that they have no conflicts of interest.

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Juan Carlos Sanz[a,b,*], Aurora Fernández-García[b,c], Juan Emilio Echevarría[b,c], Fernando de Ory[b,c]

[a] *Laboratorio Regional de Salud Pública de la Comunidad de Madrid, Dirección General de Salud Pública, Consejería de Sanidad, Comunidad de Madrid, Madrid, Spain*
[b] *Consorcio de Investigación Biomédica de Epidemiología y Salud Pública (CIBERESP), Spain*
[c] *Laboratorio de Referencia e Investigación en Enfermedades Víricas Inmunoprevenibles, Centro Nacional de Microbiología, Instituto de Salud Carlos III, Madrid, Spain*

* Corresponding author.
E-mail address: juan.sanz@salud.madrid.org
(J.C. Sanz).

Genitourinary tract infection in children due to *Aerococcus* other than *Aerococcus viridans*. Literature review and 3 case reports☆

Infección del tracto genitourinario en el niño por Aerococcus *no* viridans. *Revisión bibliográfica y descripción de 3 casos*

The genus *Aerococcus* spp. was described for the first time in 1953. It comprises eight different species, among which *Aerococcus urinae* and *Aerococcus sanguinicola* are the primary human pathogens, being associated with underlying disease in adults.[1] However, they have been reported as rare causes of infection in the paediatric population. We report clinical and microbiological characteristics corresponding to three cases.

Case 1

A 10-year-old boy visited the emergency department owing to a fever of 40 °C lasting 24 h associated with abdominal pain. Notably, he was found to have pain on palpation of his right flank, with painful fist percussion.

He had a history of admission when he was 25 days old due to a suspected febrile urinary tract infection (UTI), not confirmed microbiologically. A renal ultrasound revealed bilateral pyelocaliceal dilation. At 7 years of age, he was diagnosed with acute appendicitis. In the postoperative period, he was readmitted owing to fever and elevated acute-phase reactants, with normal urinalysis results. He was treated with piperacillin/tazobactam and responded favourably.

A urinalysis showed leukocyturia. A urine culture and blood testing revealed 14,259 leukocytes/mm^3 and C-reactive protein (CRP) 22.6 mg/l. The boy was diagnosed with pyelonephritis and a decision was made to treat him with cefixime for 7 days. A renal ultrasound showed pyelocaliceal dilatation, distally tortuous right ureter and urinary retention.

Case 2

A 5-year-old boy had erythema of the urinary meatus and whitish urethral discharge, with the rest of the examination being normal. A sample of the discharge was taken for culture and treatment was started with a topical corticosteroid. He was seen by his paediatrician 21 days later due to persistent urethral discharge, with no fever. He was prescribed topical mupirocin for a week, and his symptoms remitted.

Case 3

An 8-year-old boy had colicky abdominal pain for 2 days and diarrhoeic stools. A urinalysis revealed microhaematuria, and a mid-stream urine culture was performed. He was prescribed fosfomycin tromethamine for 2 days, and his signs and symptoms disappeared. A subsequent renal ultrasound was normal.

Microbiology study

Using previously described procedures,[1,2] the urine cultures performed showed >100,000 colony-forming units (CFUs)/mL and >10,000 CFUs/mL of *A. urinae* for case 1 and *A. sanguinicola* for case 3. Abundant colonies of *A. urinae* alone grew in the urethral discharge culture. For the urine cultures, sensitivity to cefotaxime, ciprofloxacin, nitrofurantoin, penicillin and vancomycin was studied. For the urethral discharge culture, sensitivity to ampicillin, levofloxacin, linezolid, meropenem, rifampicin, tetracycline and vancomycin was studied. The micro-organisms were sensitive to all the antibiotics assessed.

Conclusions

Genitourinary tract sample culture enables identification of unusual micro-organisms that may present in patients with risk factors. Two of these micro-organisms, which were recently described, are *A. urinae* and *A. sanguinicola*. Infection with these micro-organisms has been widely reported as a cause of potentially serious diseases (pyelonephritis, bacteraemia, endocarditis, peritonitis, etc.) in elderly patients with urinary tract infections, immune disease or systemic disease.[1] In a review conducted in PubMed (7/2/2020), we found just 8 cases in patients 0–18 years of age (Table 1).[3–10] Among them, 6 cases featured the notable finding of extremely foul-smelling urine and two presented endocarditis. Another corresponded to a case of pyelonephritis in a patient with vesicoureteral reflux who presented abdominal pain and fever.[8] A case of bacteraemia in a 14-year-old patient with leukaemia was also reported.[9] Patients were mostly adolescent or pre-adolescent males and generally received a late diagnosis. Case 2 in our series

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