



# Enfermedades Infecciosas y Microbiología Clínica

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## Letter to the Editor

### Measles confirmed case in vaccinated patient: Role of the specific IgG avidity testing



#### Caso confirmado de sarampión en vacunada: papel de la determinación de avidez de IgG específica

Dear Editor,

Measles has shown a re-emergence in Europe in recent years.<sup>1</sup> In Spain this increase has not occurred, but the seroprevalence in young adults is lower than the ideal,<sup>2</sup> despite the high coverage with the triple vaccine for measles, mumps, and rubella (MMR), due to its decrease over time after vaccination. For this reason, the disease now tends to appear in adults, frequently linked to imported cases and, sometimes, related to healthcare.<sup>3,4</sup> Microbiological diagnosis is based on the combined use of reverse transcriptase polymerase chain reaction (RT-PCR) and serology.<sup>5</sup>

The purpose of this letter is to report on a case of measles in a correctly vaccinated patient, in which the microbiological diagnosis showed certain particularities (Table 1). This was a 28-year-old woman, clinical assistant in a hospital Accident and Emergency department, vaccinated with two doses of MMR, who was in contact with a patient treated at her centre for suspected mononucleosis who, after assessment in Accident and Emergency, was transferred and admitted to another health centre, in another Autonomous Region, where it was later confirmed as a case of measles. After the notification of that case, a serological study was carried out on the exposed patient mentioned here (still asymp-

tomatic), on a serum sample extracted five days after contact to assess and confirm her immune status, with both IgM and IgG being negative for measles through CLIA (DiaSorin SpA, Saluggia, Italy), indicating home quarantine. Thirteen days after the contact, she developed fever (38 °C), which subsided within four days, followed by an enanthem and an atypical rash (arms and legs). In view of the situation, it was recommended that a sample of pharyngeal exudate be taken for study by RT-PCR of the nucleoprotein gene (RealCycler®, molecular progeny, Valencia, Spain) and a second serum sample, which was finally obtained 20 days after exposure and three days after the onset of the rash. The RT-PCR result on the pharyngeal exudate was negative. In the second serum sample (reprocessed in parallel with the first) the IgM remained negative, but a positive IgG result was found, which also had a high avidity index (>80%), determined by ELISA (Euroimmun, Lübeck, Germany).

Although MMR is highly effective against measles, protection can wane over time (waning immunity) and a small proportion of vaccinated people exposed to the wild virus can become infected.<sup>6,7</sup> The increase in vaccination coverage means that the number of immunised people is high, so it is expected that, although rare, the absolute frequency of cases in vaccinated individuals will increase in the future.<sup>6,7</sup> MMR failures can be primary (initial lack of response) or secondary (initial response, but with a subsequent loss of protection).<sup>8</sup> In regions with good vaccination coverage the latter are more common. The diagnosis of measles vaccine failures is complicated due to the atypical clinical presentation and laboratory results, which apparently can be confusing<sup>7,9</sup>: IgM is usually

**Table 1**

Clinical-epidemiological characteristics of the case.

Case		28-year-old woman born in Spain, healthcare professional	
Clinical presentation		Fever of 38 °C followed three days later by sore throat and an atypical skin rash not accompanied by cough, coryza or conjunctivitis	
Epidemiological history		Occupational exposure with a confirmed case	
1st dose MMR	12 years old		
2nd dose MMR	18 years old		
Sampling			
Time since exposure		Time since onset of symptoms	
Initial serum samples (asymptomatic, occupational risk assessment after contact with a confirmed case)		5	8
Onset of symptoms (fever and skin rash 4 days later)		13	0
Second serum sample and nasopharyngeal swab sample for RT-PCR		20	7
Urine sample		28	15
Microbiological results			
First serum sample	IgM	Negative	
	IgG	Negative	
	IgG avidity	Not applicable	
	IgM	Negative	
Second serum sample	IgG	Positive	
	IgG avidity	High (>80%)	

negative (since it is not the first contact with the virus [live, but attenuated in the vaccine]) and RT-PCR may not be able to detect the virus due to a lower viral load, probably due to a faster and more effective immune response that limits its ability to multiply in the previously vaccinated host. For the characterisation of vaccine failure, the IgG avidity test is crucial,<sup>7</sup> as it differentiates between the first contact with the virus (low avidity, which in vaccinated people would indicate primary failure) and a new contact (high avidity, indicative of secondary failure in vaccinated individuals).<sup>7,9</sup> Sometimes, as occurred with this patient, despite complete vaccination, IgG can be negative in the acute phase (probably due to the decrease to undetectable and non-protective levels). Seroconversion with specific high-avidity IgG would be the consequence of the booster effect caused by natural infection. So, in this case, which met confirmation criteria, both epidemiological (link with a measles case) and microbiological (IgG seroconversion),<sup>10</sup> but which produced results that could be seen as discrepant (negative IgM and RT-PCR), the determination of high IgG avidity in the second sample indicated that the vaccine failure was secondary.

### Conflicts of interest

The authors declare that they have no conflicts of interest in relation to this article. This work is a consequence of the surveillance activity carried out within the framework of the plan for the elimination of measles, rubella and congenital rubella syndrome in the Autonomous Region of Madrid, in Spain.

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### Characterization of wound infections among patients injured during the Russo-Ukrainian war in a Role 4 hospital



### Caracterización de las infecciones de herida entre pacientes procedentes de la guerra ruso-ucraniana en un hospital Role 4

Dear Editor,

We have read with interest the article by Rodero-Roldán et al. entitled *Characterisation of wound infections among patients injured during the Russian-Ukrainian war in a Role 4 hospital*.<sup>1</sup> The title already includes a semantic inaccuracy with the use of the term “Role 4”, about which we would like to make several points.

Although the article focuses on an interesting characterisation of microbial patterns in war wounds of Ukrainian combat casualties treated at the Hospital General de la Defensa “Orad y Gajás” military hospital, in their discussion the authors include a brief contribution about the concept of medical care in the military field.

“Apoyo Sanitario en Operaciones” [Medical Support in Operations] is defined as the set of activities, both in terms of planning and execution, aimed primarily at providing everything necessary for the prevention of illness in a timely manner, and the promotion, maintenance and restoration of health during the deployment, support and withdrawal of a military operation, with the aim of achieving the operational capability necessary for the successful completion of the mission. This is a facilitator that provides support to the Forces, helping to maintain combat capability and freedom of action.<sup>2</sup>