Impact of moderate vaccination rate against Rotavirus during 9 years in the gastroenteritis hospitalization rate

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Background

Rotavirus (RV) vaccines were introduced in Spain between 2006 and 2007, and despite moderate coverage, it showed high effectiveness in the short term. We aim to evaluate the impact of moderate vaccination (22.3-49.3%) during 9 years in all-cause (AC) acute gastroenteritis (AGE) and RV-caused AGE hospitalization rates in Galicia (Northwest Spain) in children younger than 5 years.

Material and methods

In this ecological retrospective study, data have been obtained from *Conjunto Mínimo Básico de Datos* (CMBD; www.iasist.com) database. The study population considers children younger than 5 years old admitted between July 2003 and June 2015. We have considered AGE (ICD-9 code from 001 to 009), and more specifically AGE caused by RV (RV-AGE, code ICD-9 008.6). Population data has been obtained from *Instituto Galego de Estatística* (www.ige.eu). Yearly hospitalization rates were analyzed excluding year 2007 (when the vaccine was introduced).

Figure 1 Yearly hospitalization rates by AGE (A) and RV-AGE (B).

AGE	2008	2009	2010	2011	2012	2013	2014	2015	RV-AGE	2008	2009	2010	2011	2012	2013	2014	2015
<1 year	51.1	49.4	44.5	28.9	34.2	48.1	26.3	29.0	<1 year	57.2	50.2	50.4	12.7	25.7	50.9	19.1	17.7
1 year	49.0	35.8	45.1	50.4	3.8	47.3	22.7	13.4	1 year	53.0	25.3	36.6	33.7	-12.0	42.1	-0.9	-2.9
2 years	60.9	37.0	48.4	48.5	37.4	36.4	8.0	-2.0	2 years	56.3	31.3	32.1	25.8	27.6	21.1	-11.3	-37
3 years	33.4	39.2	43.9	52.3	49.2	37.8	-38.5	-0.8	3 years	16.0	-13.4	6.7	38.2	12.3	45.6	-55.9	-72.6
4 years	41.0	53.1	48.4	35.5	38.6	51.8	-2.0	13.4	4 years	53.5	36.1	19.2	37.7	55.9	74.8	-55.7	-52.2
<5 years	50.3	42.9	45.5	41	29.1	47.3	19.0	19.6	<5 years	53.9	36.3	40.6	24.2	17.1	46.7	6.5	1.0

Table 1. Reduction of hospitalizing rates (%) in post-vaccination years in comparison with pre-vaccination period by age group.

Results

A significant decrease in hospitalization rates was observed since the introduction of RV vaccine when comparing with the pre-vaccination period for children younger than 5 years old for both AGE (from 19.0% in 2014 to 50.3% in 2008) (Figure A, Table 1) and RV-AGE (from 26.3% in 2014, to 51.1% in 2008) (Figure B, Table 1). In the last years the magnitude of this decrease is smaller, which could be related to different factors from test sensibility to duration of herd protection or disease seasonality.

Conclusions

Vaccination against RV, even with moderate (although sustained) vaccination coverage, shows a high effectiveness in relation to hospitalization by AGE and RV-AGE. The present study reinforces the convenience of including RV vaccine in the Spanish immunization schedule.