

Use of the whole country insulin consumption data in Israel showed a reduced prevalence of type 1 diabetes in children aged <5 years during universal Rotavirus vaccination

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Background and Aim

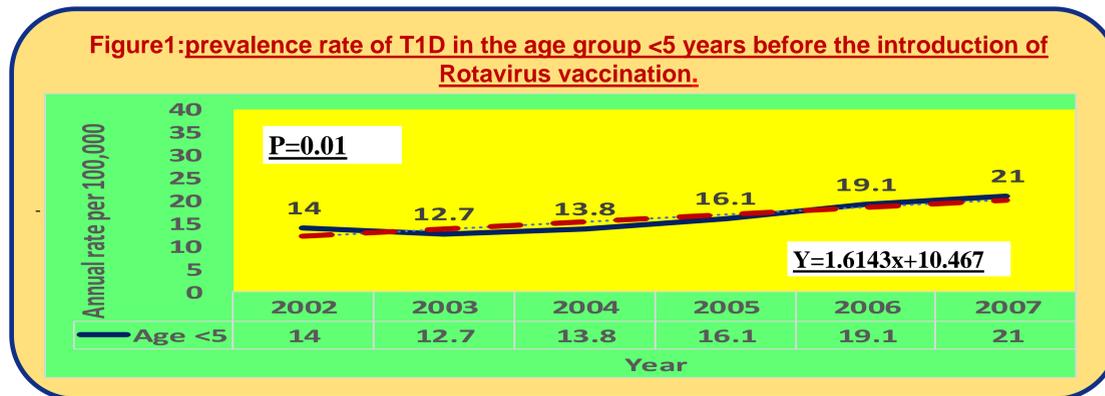
The possible role of Rotavirus in the etiology of type 1 diabetes (T1D) has been reported in several studies. This assumption has been further documented by reports showing that the introduction of Rotavirus vaccination resulted in a decline in the incidence of early childhood T1D in Australia (1), .US (2,3), Israel (4) and Austria (5). These findings however were not replicated by 2 reports from Finland, though a recent report by Parviainen et al reported an unexpected decrease in the incidence of T1D in children aged <5 years and children 5-9 years of age starting in the year 2011, which occurred after the introduction of the rotavirus vaccine to their national vaccination program. An additional report from the US revealed no influence on T1D by the Rotavirus vaccination. These inconsistent results may be due to differences in the populations studied, genetic backgrounds and methods of study. We herewith present additional evidence correlating an attenuation of the prevalence of T1D in early childhood (<5 years) in Israel with Rotavirus vaccination using data from the national quality indicators program with nationwide data for pediatric T1D.

Methods

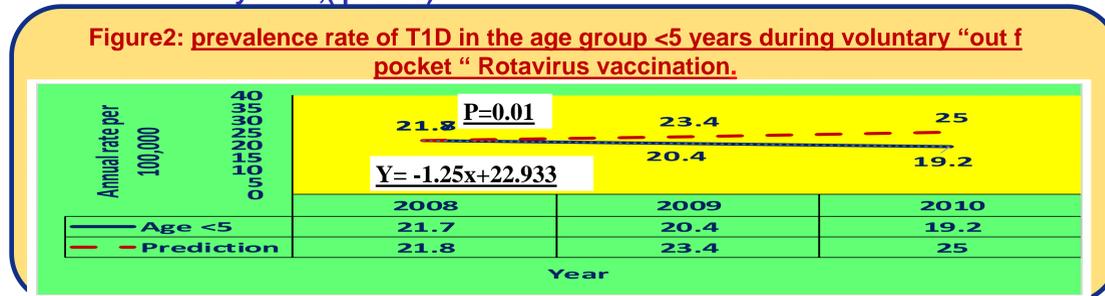
The data was retrieved from the National Program for Quality Indicators in Community Healthcare (QICH), which operates in full collaboration with Israel's four Health Care Organizations (HMOs) to promote health care monitoring. In Israel, all permanent residents are medically insured under the National Health Insurance Law and are members of one of the four HMO's. Data are systematically collected for the entire population of Israel from all four health insurance plans to create national-level healthcare quality indicators that are publicly reported. Quality indicators for diabetes have been the flagship of the QICH program since its establishment in 2002

Results

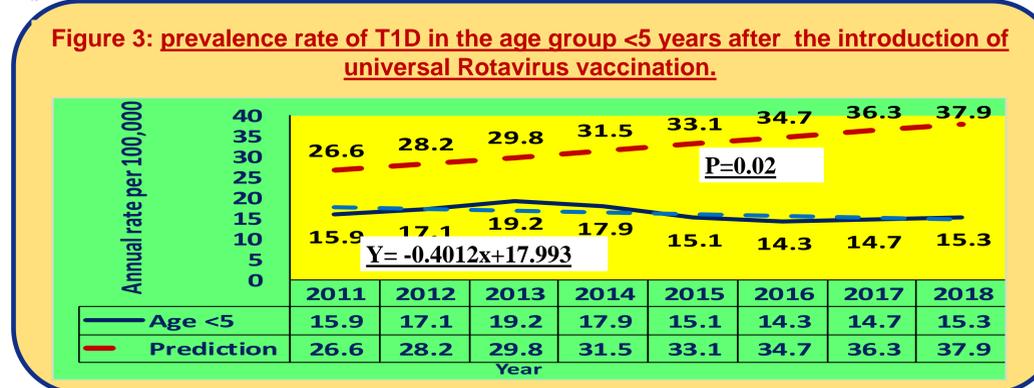
During the pre- Rotavirus vaccination period (Fig 1), the percent change (PC) of T1D patients aged <5 years showed a rise of 50.0% with a positive average Annual Percent Change (AAPC) of 10.0%, (p=0.01)



During the period of voluntary "out of pocket" Rotavirus vaccination; (Fig 2), with an estimated 30% coverage of infants, the prevalence rate decreased by 11.5% and the APC decreased by 6.0%, (p=0.01)



After the introduction of universal Rotavirus vaccination (Fig 3), the PC of the yearly average prevalence for children aged <5 years decreased by 3.8% , with a negative AAPC of -2.5% (p=0.14). The interaction between equations for the estimated trend lines before vaccination and after vaccination showed significant differences (p=0.002).



References

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* The authors have no conflicts of interest relevant to this article disclose

Conclusions

This study replicates and extends our earlier findings on the incidence of early childhood T1D in Israel using national-level Diabetes Register data conducted by Israel Center for Disease Control (ICDC), Ministry of Health (4), showing that Rotavirus vaccination of infants correlates with an attenuation in the incidence of T1D in the age group <5 years.