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Relation between Rotavirus and Norovirus infections and blood group antigens

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Enteric viruses are a major cause of gastroenteritis in Tunisia. We conducted a prospective survey to determine the circulation of enteric viruses during the winter season 2011-2012. One hundred fourteen paired saliva and stool samples were collected from children (N=114) below 6 years of age suffering from acute gastroenteritis and who visited a pediatrician at the hospital of Monastir. Blood samples were also collected from those patients to determine whether secretor status and blood phenotypes could be related to gastroenteritis.

Screening of the stool specimens showed that rotaviruses (RVs) and noroviruses (NoVs) were responsible for 25.4% and 35.1% of the gastroenteritis, respectively. GII.3 genotype was the most predominant among NoVs (72.5% of all NoVs) while G9P[8] was the predominant circulating rotaviruses (41.4%).

For the 114 patients who were phenotyped for human blood group antigens (HBGAs), the secretor and non-secretor phenotype represented 79 and 21%, respectively. Rotaviruses were detected among secretor (N= 28) and non-secretor (N=4) individuals. Additionally, RVs were detected for all blood types among the secretor population (H antigen=16 RVs; A=10 RVs; B=4 RVs; AB=2 RVs). Data analysis suggested there is no clear association between ABO blood group antigens or the secretor status and RV infection. Inversely, RV infection always occurred in Lewis-positive patients (P=0.05). Similar observations were made for NoVs where 83% of the viruses were detected in secretor individuals (H antigen=22 NoVs; A=9 NoVs; B=7 NoVs; AB=1 NoVs). Five GII.3 and one GII.7 genotypes were detected in Lewis-positive non-secretor individuals. Despite the fact that our data showed that GII.3 NoVs could infect non-secretor individuals, no binding was observed using saliva sample and GII.3 baculovirus-expressed Virus Like Particles from stool from the same patient. Our observation let us to conclude that non-HBGA ligand might participate to NoV attachment in newborn.

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