The gene expression of helicobacter pylori neutrophil-activating protein (HP-NAP), an immunomodulator in allergic asthma: The first case – control study conducted in children living in Istanbul-Turkey

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Background: It was reported that there is an inverse relationship between the presence of *H. pylori* and asthma and Th2 response may be directed to the Th1 response in asthmatic persons by HP-NAP A. We report the *H. pylori* quantity in the gut microbiota of children with allergic asthma comparing with that of healthy controls. Additionally we report the gene expression levels of HP-NAP A.

Methods & Materials: From March 2014 to January 2015 bacterial DNA and RNA were isolated from stool samples of 92 asthmatic children aged from 3 to 8 years and from stool samples of 88 age, and gender matched healthy controls. The quantity of *H. pylori* was determined by Real Time PCR and cDNA synthesis was made from the isolated RNA. The gene expression studies were conducted with HP-NAP A gene (Accession No: U16121.1) and with 16S rRNA gene, primers, probes, cDNAs and Lightcycler 480 Probe master kit, RD in LightCycler 96 instrument. The Cq values obtained from HP-NAP A gene were compared with that of 16S rRNA reference gene and gene expression analyses were performed using delta delta-dCt method.

Results: *H. pylori* DNA was found negative in stool samples of all 92 asthmatic children and positive in 18(20.4%) of 88 healthy controls. A statistically significant difference was found between these groups(p<0.0001, OR =0.49). The quantity of *H. pylori* determined by qPCR was higher in 7 of 18 *H. pylori* positive samples but despite that, in 4 of these 7 samples, the detected HP-NAP A expression levels was low comparing with the levels obtained from 8(8/11) of the remaining 11 *H. pylori* positive samples.

Conclusion: Our findings supports the opinion about the presence of an inverse relationship between *H. pylori* infection and asthma. Additionally, we believe that as well as the presence of HP-NAP A, its expression level plays an important role in the immunomodulation and we can think that its protective effect against asthma is related with the expression level of HP-NAP A rather then the quantity of *H. pylori* in the fecal microbiota. We believe that more extensive researches with different approaches and different perspectives are needed.

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