The association between polymorphism in \textit{hla-a}, \textit{hla-b}, \textit{hla-dr} and \textit{dq} genes of gastric cancer and duodenal ulcer patients with CagL positivity among cytotoxin associated gene A-positive \textit{Helicobacter pylori} strains: the first study in the Turkish population

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\textbf{Background:} Cytotoxin-associated gene L (CagL) has been shown to play a role for the injection of CagA into gastric epithelial cells in \textit{Helicobacter pylori} infections. Polymorphisms in HLA genes are associated with the development or prevention of gastric cancer in \textit{H. pylori}-infected individuals. We aimed to evaluate the association between polymorphism in HLA-A, HLA-B, HLA-DR and DQ genes of gastric cancer and duodenal ulcer patients and cagL positivity among cagA-positive \textit{H. pylori} strains for the first time in Turkey.

\textbf{Materials/methods:} The study and control groups were formed from 94 \textit{H. pylori} strains (44, gastric cancer, 50 duodenal ulcer patients) and 86 \textit{H. pylori} strains (50, non-ulcer dyspepsia patients, 36 individuals with normal gastrointestinal system), respectively. cagA and cagL were determined by PCR method. DNA from peripheral blood samples was obtained by EZ-DNA extraction kit. HLA-A, -B, -C, -DRA1, DRB1, DRQA1 and DRQB1 loci genotyping were performed by eRES SSO HLA Typing Kits and HLA-DQB1 loci genotyping were performed by SSO HLA Typing Kits.

\textbf{Results:} cagL positivity were detected in 88 (93.6%), and 54 (56.2%) of the study and control group strains, respectively. When the two groups were compared, HLA-A 01, HLA-A 02, HLA-A 03, HLA-B 35, HLA-DQA1 01, HLA-DQA1 02, HLA-DQA1 06 and HLA-DQBA1 05 alleles were detected significantly higher in study group due to the cagA+cagL. HLA-DQA1 01 \[p=0.001, \text{OR}:2.415 \text{ 95\% CI (1.439-4.055)}\] and HLA-A 02 \[p=0.017, \text{OR}:1.979, 95\% \text{CI (1.128-3.473)}\] were detected as independent risk factors for gastric cancer and duodenal ulcer due to the multivariate logistic regression analysis. The frequencies of HLA-A 02 and HLA-DQA1 01 alleles were detected as 43.9%, and 42.8%, respectively due to the cagA+cagL positivity. These alleles exhibited similiar odds ratios for HLA-A 02 and HLA-DQA1 01 alleles, as 1.979 and 2.415, respectively for gastric cancer and duodenal ulcer risk due to cagA+cagL positivity.

\textbf{Conclusions:} HLA-A 02 and HLA-DQA1 01 alleles exhibited similar ORs. We may suggest that individuals with HLA-A 02 and HLA-DQA1 01 alleles may have 1.97 and 2.4 folds higher gastric cancer or duodenal ulcer risk than individuals with other HLA alleles when infected with \textit{H. pylori} strains with cagA+cagL.