

## **ABO Blood Group and Susceptibility to Urinary Tract Infection in Children**

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### **Abstract**

**Background:** ABO blood group antigens with carbohydrate molecules are found on the surface of erythrocytes, phagocytes, lymphocytes and certain epithelial tissues including urothelium, which may influence to human susceptibility for infectious diseases. Many bacteria cross-react with ABO blood groups antibodies, the Isohaemagglutinins may have an important protective role against cross-reacting bacteria.

**Objective:** The aims of present study were to determine the ABO blood groups and susceptibility to Urinary tract infection (UTI), and to determine the relationship between ABO blood group antigens and the type of bacteria that cause urinary tract infections.

**Materials and Methods :** ABO blood grouping was performed by poly clonal ABO Antisera, and the distribution of ABO Blood groups for 50 children with urinary tract infection (UTI) with positive urine culture (Patients group) were compared with the ABO blood group distribution for 50 uninfected UTI children (control group). Patients were matched one-to-one with control of the same age, sex and origin. Questionnaires were filled out from two groups regarding to their ages, sexes, blood group types,

Geographical origin and the type of Uropathogen was filled out for each patient. The blood groups of patients were compared with bacteria types isolated from cultures, ages, sexes and Geographical origin. Data were analyzed by IBM SPSS v20, Fisher exact test. The level of statistical significance was set at 5% ( $p < 0.05$ ).

**Results:** The distribution of blood groups was as follows: blood group O was 41%.28%, 23%and 8% for Blood group A, B, and AB respectively. Escherichia coli (E.coli) was the major cause of UTI in the studied group (60% of the patient), followed by Klebsiella (18%). The other types of bacteria were less frequent. There was a significant difference found in the distribution of the types of bacteria among the four blood groups ( $p=0.049$ ). However, urinary tract pathogens had no significant correlation with sex and age, origin. No significant found in the distribution of blood group between two (patients and control) groups. Blood group A was much less infected with E.coli (25%) than those with the other three blood groups (AB was 80%. 69.2%, 70% for B and O respectively).

**Conclusion:** This study extends and confirmed previous studies in Sudan regarding correlation between UTI and ABO blood groups. However, the current study in contrast with other studies and this could be due to differences in genetic makeup and epidemiological settings. In conclusion the current study finds that E.coli is the most common known cause of UTI in children. Blood group A showed less chance to get UTI by E.coli infection in children. This could be due to protectively with anti B Isohaemagglutinins, or antigen A)it self which present in urotheilum, or both protective factor.

**Key words:** ABO blood group ,carbohydrate , susceptibility , Isohaemagglutinins cross-reactingbacteria , urinary tract infections, children , Klebsiella , Escherichia coli (E.coli)