

Abstract

Staphylococcus aureus is a commensal as well as pathogenic organism. The carriage rate of *S. aureus* has been estimated to be 20-30% among Palestinian population. Nasal colonization of this organism can potentially increase the risk of infections. In bacteria, Fe is a co-factor of many enzymes and has crucial role in man physiological processes such as DNA replication, transcription and metabolism. Iron acquisition is required for *S. aureus* colonization and subsequent pathogenesis. *S. aureus* employ different mechanisms to obtain iron through lysis of the red blood cells by hemolytic toxins and the production of siderophores and the consumption of heme from the host.

Haptoglobin is an acute phase plasma protein that is synthesized primarily in the liver. There are two alleles expressing three different phenotypes, Hp1-1, Hp2-1 and Hp2-2. The polymorphism of haptoglobin has been associated with diseases in general and bacterial as well as other infections in particular. The main function of haptoglobin is seen in its rapid binding and removal of hemoglobin from the circulation. The presence of free hemoglobin in the circulation released due to hemolysis of the red blood cells in-vivo or during storage prior to transfusion has been associated with vascular injury.

This study was conducted on 1500 Birzeit university students, 26% males and 74% females. Nasal swabs whole blood were simultaneously obtained from all participants. Nasal swabs were cultured on mannitol salt agar to screen for the presence of *S. aureus*. Definitive identification of *S. aureus* was primarily done by tube coagulase and occasionally by Staphylase tests. Haptoglobin phenotyping was carried out by starch gel electrophoresis.

Our results showed that 20% of tested students were carriers for *S. aureus*. Haptoglobin polymorphism in *S. aureus* carriers was 12% Hp1-1, 34% Hp2-1 and 34% for Hp2-2. Haptoglobin polymorphism in control group was 10% Hp1-1, 44% Hp2-1 and 35% Hp2-2.

Haptoglobin polymorphism was not detected in 20% of cases and 10% of the controls. Statistical analysis using Chi square by SPSS did not reveal any significant difference between the cases and controls. Allele frequency calculated for haptoglobin was 0.37 for the Hp1 allele in both cases and controls.

The aims of this project were to determine the association of *s. aureus* nasal carriage with haptoglobin polymorphism. In addition, the allele frequency of haptoglobin gene was determined for the Palestinian study population.

In conclusion, this study has provided new information regarding the status of haptoglobin among young Palestinians who carried *S. aureus* in their anterior nares as compared to non carriers. We recommend that this study should be expanded using equal numbers of males and females. In addition, it should also consider involving patients suffering from diseases such as renal failure, cardiovascular disease and diabetes.