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THESIS ABSTRACT

Susceptibility to Mumps Infections in Tikrit City: A Comparative Study

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This is a diploma dissertation that was conducted in Tikrit University College of Science , in 2018, under the supervision of Assistant Prof. Dr. Hala Mohamed Majeed, Tikrit University College of Veterinary Medicine, Tikrit, Iraq [TUCOVM], Email: m.hala17@yahoo.com, Mobile: +9647701227150, ORCID: http://orcid.org/0000-0003-3772-1218

Background: Immunization has a promising future. We are entering a new era in which it is expected that the number of available vaccines will double. Immunization services are increasingly used to deliver other important health interventions, making them a strong pillar of health systems. There are still millions of people who do not benefit from the protection that vaccination provides. They are at risk of life-threatening illness every day. In Iraq there are still thousands of children who do not complete all their doses and hence not fully protected.
Aim: This study aiming to illustrate the mumps immunological status in adults and children in Tikrit city.

Materials and methods: A Cross-sectional prospective study conducted in Tikrit Teaching Hospital and Primary Health Care Centers. The study population included adults and children from both gender. The adult's population group is recruited from university students, while the children are recruited from 6^{th} primary, 1^{st}, 2^{nd} and 3^{rd} secondary schools. The sample size is 100 subjects in each adult and children groups [50 subject males and 50 females]. Thus a minimum of 200 subjects to be included in the study. A pre-designed questionnaire is used for gathering data from each individual included in the study. A verbal informed consent taken from each individual before enrolment in the program. Data on vaccination was taken directly from each individual or vaccination cards if available. ELISA was used for determination of IgG for mumps diseases in central research Laboratory and Tikrit Laboratory's. The tests were performed according to manufacturer instructions.
Results: The mean value of optical density was with predictive value for mumps antibodies concentration. The mumps antibodies mean serum value was lower in adult subjects as compared to child group. This finding indicated that immune response to mumps decreased with time and contributes to resurgence of mumps in community. Thus the frequency of mumps none immune status was higher in adults as compared to child. Additionally, mumps immune response with high titer was significantly lower in adults than in children. The high titer rate was two times more in children than in adults. These figures indicated that IgG mumps antibody concentration confirmed the possibility of immune reduction with age and explain the outbreak of the disease in vaccinated subjects. Thus the present study finding may gave an explanation for the high rate of reported cases in Iraq in 2016 as compared to previous years. However, the war conflict may act as another factor that disturbs the vaccination program performance.

The mean serum mumps IgG concentration was higher in the male as compared to the female, but the difference was not significant. In children, the mean serum mumps IgG was significantly higher in child male as compared to child female. Thus, this study finding does confirm that immune response to mumps vaccination was affected by gender and more intensive in male. The mean mumps serum IgG values were significantly higher in child male as compared to the adult male. The same trend was demonstrated in comparison of adult female with child female. The above findings indicating that mumps immune response was affected by age.

Conclusion: The present study finding indicating that about 20% of children and 26% of adults is with mumps no immune status. This percentage mean that 26% of adults are susceptible to get mumps virus infection, and this represents a public health problem as the infection in adults may lead to the higher rate of complications. Additionally, this study confirms the possibility of mumps outbreak in vaccinated subjects, and this may be due to waning of immune response with time, vaccine failure, immune escape, and strains variation. The adolescent vaccination is recommended since this study shows non-immune status in about 26% of adults. In addition, children at school age are also to be involved in a vaccination program to prevent the outbreak in the 20% susceptible rate of children.