CHAPTER VI

SUMMARY & CONCLUSIONS

VI- Summary and Conclusions

Most of the infants and children attending outdoor clinics suffer from pyrexia and infection which is commonly due to viral or bacterial agents. This study was done in an attempt to assess whether these infections have an effect on blood constituents. The immunization with attenuated measles virus was used as a model of a mild and predictable viral illness. The study included 30 infants aged nine months who attended to be vaccinated against measles according to the compulsory vaccination schedule in Egypt.

Complete blood picture, serum iron and TIBC in addition to assessment of phagocytic function of polymorphonuclear leukocytes were done for all infants before vaccination. The same tests were done ten days later. The difference in results was statistically analyzed.

Coulter counter model CBC_5 was used for determination of red blood cell counts, total white cell counts, hematocrit, MCV (mean corpuscular volume), and hemoglobin level. Differential leukocyte counts were made by spreading blood films on slides which were stained by leishman stain and examined microscopically under oil immersion lens. Reticulocyte counts were estimated by staining viable

cells with brilliant cresyl blue stain and then spreading blood films on slides to be examined by oil immersion lens. Platelets were counted in hemocytometer after mixing blood with 1% ammonium oxalate solution. Iron and TIBC were determined by colorimetric method (Kits provided by Boehringer Mannheim Diagnostica).

There was a significant reduction in hemoglobin concentration on the tenth day after the administration of measles vaccine. There was also a significant decrease in MCH (mean corpuscular hemoglobin) as well as in MCHC (mean corpuscular hemoglobin concentration). On the other hand red blood cell count, hematocrit, and MCV (mean corpuscular volume) showed no significant changes. Serum iron level was significantly decreased while TIBC did not change.

These results mean that acute mild viral infection induces hematological changes similar to the changes encountered in the anemia of chronic disease.

The mechanisms responsible for the development of the infection-related anemia have not been defined. Low serum iron is most probably due to impaired reutilization of iron. Among the reasons postulated as causes of this anemia is defective red cell production due to decreased iron level,or impaired erythropoietin effect on erythroid precursors. Increased red cell destruction may also be present in acute infections leading to a rapid fall in hemoglobin. The reticulocytes showed

slight significant decline. This indicates failure of the marrow to meet the need f a slightly decreased red cell survival.

The anemia of infection resolves without hematinic therapy in presence of dequate iron in the diet. So, when an infant has a low or low normal hemoglobin oncentration, both the infection history and the dietary history will help in leciding whether to start a therapeutic trial of iron.

In this study there was a significant decrease in platelet count on the tenth lay after inoculation by measles vaccine which may be due to diminished platelet roduction. It is quite possible that this degree of platelet depression occurs ommonly during the incubation period of naturally occurring measles as well as in many viral infections.

The development of reduction in hemoglobin concentration and decrease in platelet count after vaccination with the live attenuated measles virus is not deleterious to the infants and does not mean to abstain from vaccination or make restrictions to its use.

Secondary bacterial infection is a frequent complication of viral infections. This is due to impairment in immunity. Previous studies showed that the chemotactic and bactericidal function of neutrophils is impaired in a variety of viral infections and measles is one of them.

In this study phagocytic activity of polymorphonuclear leukocytes was assessed by incubating the neutrophils with candida albicans for 30-45 minutes after which films were spreaded and stained, then examined under the microscope for cells phagocytosing candida.

There was no significant difference in total leukocytic count as well as the differential count. As regards the function of neutrophils, the number of cells phagocytosing candida did not show a significant difference on the tenth day of vaccination comparable to the number before vaccination i.e. the immuno-compromised state which is found in measles was shown in our study not to occur after measles vaccination .This means that live attenuated measles vaccine can be safely administered to healthy infants without the fear of secondary bacterial infection.