Summary and Conclusions

HCV is the major cause of posttransfusion hepatitis. Even with the most sensitive *HCV ELISA* there remains a gap of several weeks between infection and first appearance of antibody. Blood donors presenting at such a time will be *ELISA* negative and the blood processed for use. In countries with low *HCV* prevalence such transmissions will be rare but in high prevalence countries their frequency could be sufficient to justify a *PCR* approach ***(Vrielink et al., 1995)***.

The aim of the present study were (i) to determine the seroprevalence of *HCV* among blood donors; (ii) to evaluate the need of *PCR* technique for the detection of *HCV* infection in blood banks by comparing its results by the results of *ELISA* technique; and (iii) to assess the distribution of *HCV* genotypes among blood donors.

This work was carried out on 201 apparently healthy blood donors attended to blood bank of Benha University hospital. Their sera were examined for the presence of antibodies to hepatitis "C" *(HCV)* using second generation *ELISA* technique. The examination of their sera also included liver enzymes *(ALT and AST)* and screening for *HBs Ag*. Fifty *HCV Ab* positive sera and eleven of *HCV Ab* negative sera were tested for the presence of *HCV RNA* by *(RT-PCR)*. *HCV* genotypes were determined for 20 *HCV RNA* positive sera. The presence of anti-*HCV* antibodies was found in 56 (27.86%) blood donors. 25 samples of 50 *HCV Ab* positive sera were found to contain *HCV RNA*. Of 11 antibody-negative samples, 2 were positive for *HCV*

RNA. Genotyping analysis revealed the presence of genotype 4 in (95%) of cases. In one (5%) sample mixed genotypes 1a-4e was detected.

This work concluded that:

- High prevalence of circulating *HCV RNA* in the age group between 30 and 39 years decreasing in older subjects probably due to higher mortality from chronic liver disease.

- Schistosomiasis and dental manipulation could be a major risk factor for *HCV* infection in Egypt.

- At the current time the majority of infected individuals are unaware of their infection.

- *HCV* infection may persist for several years without biochemical evidence of liver disease due to low cytopathic effect of the virus of healthy *HCV* carriers.

- Significant proportion of symptom-free anti-*HCV* positive individuals with normal *ALT* values have both *HCV* antibodies and circulating *HCV RNA* .

- Even with the high specificity of anti-*HCV* 2nd generation *ELISA*, false positive result may be common specially among blood donors.

- Possibility of an *HCV* infection could not be excluded by the lack of detectable specific antibodies, especially during the acute phase of infection.

- Detection of primary *HCV* by *PCR* might be the crucial marker for establishing a diagnosis of primary *HCV* infection early in the course of the disease and in discriminating between past and active *HCV* infection in patients with persistent or fluctuating antibody patterns.

- *PCR* can detect *HCV* infection in subjects with raised *ALT* that are missed by the best antibody-screening tests, thus continued *ALT* testing in blood bank is recommended to complement routine anti-*HCV* screening.

- Genotyping of *HCV* by line probe assay *(INNO-LiPA)* is a simple and reliable technique that can rapidly define the dominant circulating *HCV* genotype.

- *HCV* gentoype 4 is the most predominant genotypes in Egypt.

- *HCV* genotyping might be complementary to routine *HCV* diagnosis. *HCV* types and subtypes may have important implications in studying the epidemiologic, routes of transmission, pathogenicity, clinical aspects, complications, and response of *HCV* to interferon.

Recommendation:

- *HCV RNA* testing should be considered for both anti-*HCV* positive and negative blood donors in order to obtain correct information about the state of infectivity.

- Until a safe and effective *HCV* vaccine is available for wide application, precaution for preventing parenteral spread are likely to be the only way of limiting transmission of *HCV*.

- Further studies on larger scales are highly recommended to study probable *HCV* heterogeneity particularly type - 4 diversity in Egypt, their implication in therapy, clinical course, autoimmunity, and immune response. This could be achieved by studying nucleotide sequences in the 5' UTR, core region and other parts of the genome.

- More cosmopolitian *ELISAs* containing antigens from all major gentoypes or at least targeted *ELISAs* contatining antigens relevant to the country where the blood is screened would be a significant step to ensure the maximum possible safety of transfused blood.