INTRODUCTION

The term blood group is generally based on the presence or absence of certain antigens on the RBC membrane. These are identified by characteristic agglutination reactions with specific antibodies and this field is referred to as blood group serology (Daniels 2002). The two isoaaglutinins, anti-A and anti-B, occur naturally in humans, contrary to most other blood groups antibodies (Erskine and Socha 1978; Mollison et al., 1993). ABO blood grouping system was established by Karl Landsteiner (Landsteiner 1900) in 1900 on the basis of the presence or absence of two antigens (A and B) on RBC and its Mendelian inheritance pattern by Bernstein in 1924 (Crow 1993). In this system, four blood groups namely A, B, AB and O are identified by blood tests. The fourth blood type (AB) was discovered by Des Casterllo and Sturli in 1902 (DesCasterllo and Sturli 1902). Except for humans, only anthropoid apes, the orangutan and the gorilla have ABO antigens on their red cells, which suggest that the red cells are the last cells during evolution to obtain the ABO antigens (Oriol et al., 1986).

The ABO blood groups system is not only important in blood transfusions, cardiovascular diseases, organ transplantation, erythroblastosisis in neonates, but also one of the strongest predictors of national suicide rate and a genetic marker of obesity (Molison 1979; Hein et al., 2005). In 1911 von Dunger and Hirschfeld reported the distribution of blood group A (47%), B (11%), AB (6%) and O (36%) in Europeans, and separation of blood group A into A1 and A2 (Morgan and Watkins 2000). Weak subgroups of A can be defined as those of group A subjects whose erythrocytes give weaker reactions or are non reactive serologically with anti-A antiserum than do those of subjects with A1 RBCs (Cartron et al., 1974). The A blood type contains about twenty subgroups, of which A1 and A2 were the most common (over 99%). A1 makes up about 80% of all A-type blood, while the A2 making up the rest. These two subgroups are interchangeable as far as transfusion is concerned, but complications can sometimes arise in rare cases when typing the blood (The Owen Foundation 2008).

Sera from blood group A individuals contain anti-B antibody while B individuals’ sera contain two types of antibody against A antigens. The first is anti-A and the second one is specific towards A1 RBCs. Anti-A reacts with both A1 and A2 cells whereas the second only does with A1 RBCs. Anti-A1 is also present in some A2 and A2B individuals (Landsteiner and Levine 1926). The two most common subgroups of blood group A are A1 and A2 expressing on average, 1 million and 250,000 A determinants, respectively (Economidou et al., 1967). This study was designed to gives insight about the frequencies of these two major subgroups among Sudanese donors attending the military hospital.

MATERIALS AND METHODS

This was cross-sectional study done on a total of 100 venous blood samples collected randomly from blood group A donors...
attending military hospital blood bank between September –
October 2013. In order to determine subgroup of A. red
cell were tested against monoclonal IgM anti-A and Anti-B,
while the sera was tested against A1, B and O cells. A total of 7
ml of venous blood samples were been collected from donors
3.5 ml in (EDTA) vacucocontainer and another 3.5 ml in plain
containers. Direct blood grouping was done using 5% of the
red blood cells suspension of the donor against anti-A and anti-
B antisera. Two drop of 5% of the red blood cells suspension of
A blood group sample was divided into two different tubes.
One drop of anti A1 antisera was added to the first tube and
one drop of anti AB antisera was added to the other tube, the
two tubes were centrifuged at 5,000 rpm for twenty seconds.
15 (any negative results were obtained with anti A1 antisera
was confirmed by examination under the light microscope). For
the indirect grouping, six drops of serum from each A blood
group sample was added into three test tube (two drops in each
tube) and then one drop of known A1, B and O cells were
added in each tube and centrifuged at 5,000 rpm for twenty
seconds. (Denise M. Harmening 2005)

RESULTS AND DISCUSSION

A1 constituted approximately 80% of entire A blood group
population and group A cell which react with anti-A and not
agglutinate with anti-A1 are classified as A2, making up of
remaining 20%.12, this results approximately agreed with our
results which showed that 74 samples (74%) were A1 and the
remained 26 samples (26%) were A2. The differences between
the published date and the result we obtained might be due the
number of samples examined.

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Conflict of Interest

The Authors declare that they have no conflict of interest

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