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Relationship of ABO blood group with Hemoglubin level ,glucose level and urinary track infection of pregnant women

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ABSTRACT :

This study was aimed to determine the relationship between ABO blood group with hemoglobin level ,glucose l evel and urinary track infection in pregnant women inAL- Naissary city Thi-Qar province ,Iraq .Atotal of 100 pregnant women have beenfound to be screened in this study .Blood samples were collected to examine blood group Hb,and glu cose level Also,urine samples were collected to examine urinary track infection .The results showed a significant decrea se in hemoglobin level in pregnant women which carried the blood group O when compared with the rest groups($P<0.029$) .But there was a significant increase in urinary track infection in the same blood group($P<0.012$) . From the anothe r side the blood group type B have significant increase in glucose level($P<0.027$) .The finding of the present study was t hat we the blood group type O was more susceptible to urinary track infection and low level Hb concentration .but the b lood group type B was more susceptible to infected with Diabetes.

Kew words: ABOblood group,Hb level,glucose level,urinary track infection.

Introduction:

Ever since the discovery of blood groups in 1900.There have been efforts to discover a possible association between ABOand different diseases such as hypertensio ,diabetes mellitus ,obesity and urinary tract infection (Wang et al.,2015&Ronald et al2008).

Diabetes mellitus is a common medical problem having significant morbidity and mortality .It has a genetic predisposition although environmental factors do play their role in its genetic expression (Nwafor et al.,2015) like many other in hearted trai ,blood groups are also genetically predetermined and therefore many have an association with diabetes mellitus .(Kamil et al .,2010)Identification of a positive association with blood groups might reflect increased susceptibility to and a negative association protection against diabetes mellitus (Herry and poon.,1961)The ABO system is one of such genetic make-up of an dividable that will provide much valuable information for early detection of vulnerable groups .Certain studies suggested that those carrying ABO blood groupA,Oand B were significantly (Kucevic et al .,2013and Bener&Yousafzai.2014)common in patients with diabetes mellitus type 2.moreover ,women have are blood group B are likely to develop DM type 2 than other groups (Moinzadeh.,2014).

Gestational diabetes mellitus (GDM) is a common condition that is defined as glucose intolerance of varying degree with beginning or first recognition,during pregnancy and it affects approximately(5%) of all pregnancies all around the world. GDM is not only connected with adverse pregnancy outcomes such as macrosomia, dystocia, ,birth trauma, and metabolic complications, in newborns, but it is also a strong predictor, of transitioning to overt(DM postpartum). The connotation of ABO blood groups, with DM has been observed, before in some epidemiological and genetic studies, and resulted with varying findings, but still there are not enough studies, in the literature about an association of ABO blood groups with GDM(Karagoz et al .,2015).

Urinary tract infections (UTI)are of the most common diseases world wide affecting all age group , and can be defined as an inflammation of the tubular or parenchymal structures (Souza. , 2009). The colonization of the urinary tract may occur due to the asending of intestinal bacteria from the anus to the urinary opening causing invasion of the urethra ,bladder and ureters and may even harm kidney function (Yang et al .,1994) Adult females are the most affected ,and this fact is related to mechanical factor ,such as the female urethra being shorter and closer to the

anus(Baral andOnta., 2009) .There are also other factors that may contribute to this high rate of urinary infections ,such as sexually active young women ,pregnancy and menopause (Heilberg and Schor., 2003).

Repeated urinary tract infection is defined such as more than one (UTI) before or through pregnancy. In non-pregnant women, recurrence is defined such as three infections in the previous 12 months, or two occurrences in the last six months,UTIs are the most common bacterial infection through pregnancy. Many studies have presented that afrequency of asymptomatic bacteriuria in pregnancy,ranges between (2% 18.5%)(Meads.,2011).Cystitis, on the other hand, complicates, about (1.3%) of pregnancies (Schnarr and Smaill ., 2008).Pyelonephritis happens in (2-4%) of pregnancies with a 23% rate of recurrence directly after birth. It occurs most normally during the second half of pregnancy. It can however occur by any stage in pregnancy, and may grow after the earlier negative screening for bacteriuria, (Schnarr and Smaill ., 2008). The great risk factor for pyelonephritis is asymptomatic bacteriuria. For example, in one study 24.8% of pregnant women whose asymptomatic bacteriuria was untreated developed pyelonephritis paralleled to(3.2%) of those who were treated (Meads.,2011). In another study 30% of pregnant women with bacteriuria developed pyelonephritis paralleled to (1.8%) of those without (Meads.,2011).

The ABO phenotype of an individual ssusceptility to infection according to their blood phenotype (ABO)is due to the ABH genes which encode glycosyltransferases(enzymes)that add specific sugar to acarbohydrate chain precursor. The H.substance (Yamamoto and Mcneill., 1996).When this substance is adding to,an .L.Frucose,an O group is formed,the addition an N- acetyl D.glactosamine forms.The A group and the addition of a D-galactose forms the B group (,Yamamoto and Mcneill.,1996&Yamamoto and Hakomori.,1990).The chains that carry the ABO antigens can be glycoprotein ,glycolipids or glycosphingolipids (Nwafor et al., 2015).

The present study aimed to investigate the relationship between ABO blood groups and Hb level ,glucose level and urinary track infection in pregnant women.

Material and methods:

Study population:

100 pregnant women aged 20 - 43 years were selected from the women visited bent – AL Huda hospital in Thi-Qar province,Iraq .They were given routine prenatal drugs ,folic acid and multivitamin tablets,the pregnant women divided in to four groups :

1-group type A+blood group were(12)and type A-blood group were (13).

2- group type B+blood group were(12)and type B-blood group were (13)

3.- group type 0+blood group were(12)and type O-blood group were (13).

4- group type AB+blood group were(12)and type AB-blood group were (13).

Data collection:

The ABO blood group system ,random blood glucose and Hb induce were obtained based on standard guidelines (Krishnakanth et al .,2012).To determine the blood group type ,The finger prick was obtained with lancet under aseptic conditions ,blood group was determined by standard methods (Nwafor.,2001) using antsier and classified according to ABO blood group.Random blood glucose level of the participants was performed based on the glucose –oxidase principles using the digital glucometer as described elsewhere (7). Hemoglobin concentration was estimated by cynmethaemoglobin method (21).

Statistical Analysis:

Mean and standard deviation values were computed using statistical package for Social Science (spss) version (17.0).The results .were analyzed by applying ANOVA.

Results:

The distribution of hemoglobin concentration obtained in this study are shown in figure(1).The results indicated non significant difference in the level Hb between the blood groups (A,BandAB). ($p<0.79$,$p<0.263$,$p<0.154$, $p<0.84$)Respectively, except the females which carried the blood group O have significant decreased in Hb level when compared with the rest ABO groups ($P<0.029$).

The figure(2)showed correlation between diabetes andthe blood groups,Theresults showed that blood group B was has significant increased in diabetics compared with the rest blood groups ($P<0.027$).

The figure(3)showed correlation between urinary tract infection and the blood groups,The results showed that a significant increase in the O blood group with urinary tract infection compared with other blood groups(P<0.012).

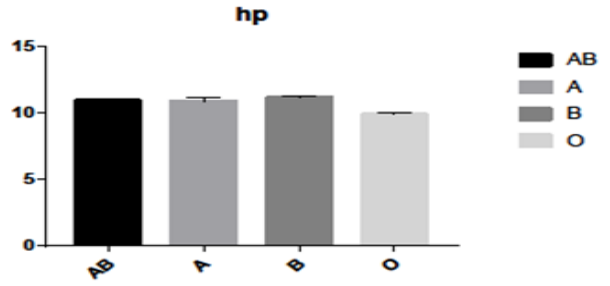

Figure (1) Hp level in all blood groups

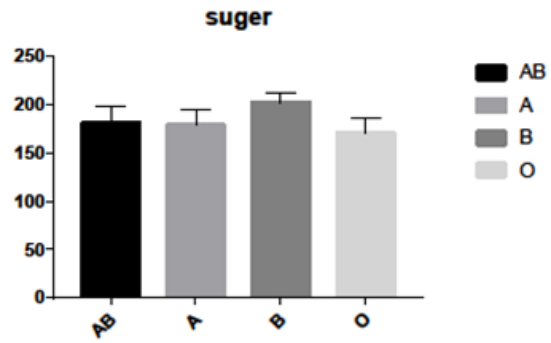

Figure (2) glucose level in all blood groups

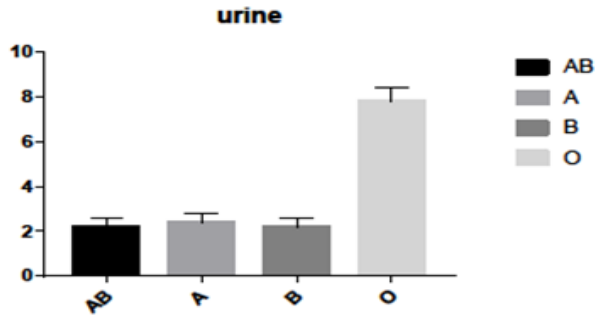

Figure (3) urinary track infection in all blood groups

Discussion:

The present study indicated a significant decrease in hemoglobin concentration of pregnant females which carried the blood group (O) compared with the rest ABO groups . This result agree with(Kumarand and Kaushik.,2013&WHO ., 2008) ,they founded greater number ofpregnant women with blood group O have lower thresholds of hemoglobin than the rest phenotypes(Kumarand and Kaushik.,2013&WHO.,2008).The main cause of low hemoglobin concentration .It frequently occurs due to inadequate iron intake ,chronic blood loss or disease .mal-absorption or a combination of all these factors in pregnancy stage (Baral and Onta .,2009&WHO 2002).But this fact result dis agreement with (Vitoratos.,2010)they founded There was no relationship between the phenotypes of the blood groups and Hb level .

The blood group B significantly in glucose level compared with the rest blood groups . This result agree with (Okon.,2008)They found high frequency of blood group B in diabetics .But disagree with (Koley.,2008) which founded reduction of blood groups AandB in diabetics .The possible explanation of these conflicting findings is that probably racial and geographical factors have a role in genetic expression of disease.

The results indicated that blood group O showed a significant increased of urinary tract infection compared with anther blood groups .These finding may indicate the influence of O blood group phenotypes on susceptibility to urinary tract infection (Sakallioglu.,2007) .and this result agree with other studies such as (Novaretti et al.,2000and Rahn.,2008) but different with the studies (Scholes et al .,2000and Kinane.,1082) that indicated no relationship between ABOblood groups and urinary tract infection.

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