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Original Research Article

Saliva Abh Secretor Status in Kano, Nigeria

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Abstract: ***Background:*** A study to obtain reference data that would be useful in comparative and analytical studies on ABH secretor status in Kano, North Western Nigeria. ***Method:*** A total of 256 subjects made up of 129 consecutive blood donors and 127 women attending Antenatal Clinic in AKTH were recruited for the study. Their secretor status was determined using saliva samples. ***Results:*** One hundred and eighty (70.31%) of the subjects studied secretors while Non- secretors were 76 (29.69%). ***Conclusion:*** There is high rate of non-secretors in Kano metropolis compared to various studies carried out in different parts of the Nigeria though similar to other climes like Dhaka in Bangladesh and Karachi in Pakistan which may be associated with the high incidence of duodenal Ulcer disease in the locality of this study.

Keywords: ABH, Secretors, Non-Secretors, Kano Nigeria.

INTRODUCTION

The ability to secrete A, B and H antigens in water soluble form is controlled by a dominant gene Se Dacie and Lewis (1994). Soluble secreted antigens are called substances Secretors are individuals that can produce A, B and H substances in their saliva, sweat, tears, semen, serum, duodenum, pancrease, bile, colostrums and other body fluids according to the individual ABO blood group D'Adamo and Kelly (2001). ABH antigens are only detected in secretors D'Adamo and Kelly (2001). The presence of ABH antigens in the makeup of the intestinal secretions has significant effects in bacterial and lectin adherence to the gut microvilli. The secretor gene (FUT 2 at 19q 13.3) codes for the activity of glycosyltransferases needed to assemble aspects of ABO blood group. This is accomplished in concert with the gene for blood group O or H (FUT1). These enzymes are then active in places like goblet, mucous gland cells resulting in the presence of antigen in bodily fluids D'Adamo and Kelly (2001). The H antigen are indirect gene products expressed as fucose containing glycan units resulting in glycoproteins or glycolipids of erythrocyte membrane or mucin glycoproteins in secretions. They served as fucosylated glycan substrates that produce A and B antigens. When alleles of both genes fail to express active enzymes, individuals bearing them in homozygous state lack the substrate for the A or B glycosyltransferases and do not express A and B epitomes D'Adamo and Kelly(2001).

A review of ABH secretor prevalence antigen in different population groups has revealed marked variations. Mourant *et al.,* (1974) reported non-secretor prevalence of 10% and 40% for American Indians and Negroes respectively similarly Akhter *et al.,* (2011) reported 40% non-secretor status in Dhaka, Bangladesh and Saboor *et al.,* (2014) reported 34% non- secretor status in Karachi, Pakistan while Jaff M. (2010) reported 24% in Iraq. Gravel *et al.,* reported 33% non-secretor among Bangalees Indians. Odeigah stated that the relative phenotypic frequency may not vary greatly from one part of Nigeria to another. Only traces of blood group substances are present in the secretions of non-secretors even though the antigens are normally expressed on their red cells and other tissues. The non-secretors status is considered a predisposing factor to some disease, Since SeSe, Sese or sese genes are genetically established, an epidemiological study of this nature will comparatively relate the phenotypic frequency of secretors and non-secretors in other places.

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MATERIALS AND METHODS

A total of 256 subject compromising 180 consecutive blood donors and 76 women attending Antenatal clinic from January to October 2005 were recruited for the study at Aminu Kano Teaching Hospital, Kano.

The method of Heamagglutination inhibition technique was employed as described by Turgeon (1989) and Dacie *et al.,* (1994).

2mls of Saliva was collected into labelled clean tube .Sample of saliva was inactivated by boiling in a water bath. After spinning, the clear supernatant was separated into another test tube. Equal volumes of diluted anti A, anti B and anti H (product of sigma Aldrich, Germany). Antisera was added to each test tube and allowed to stand for 15 minutes at room temperature. All the antisera were standardized appropriately. Thereafter, equal volumes of a 2% cell suspension of standard cells A, B and O red cells were added to each tube. After mixing, the test tubes were allowed to stand for 1 hour at room temperature (25ºC). Visual and microscopic inspection of agglutination was observed. If the saliva contains A, B or H substances, agglutination is usually inhibited in the test-tube except in the saline control.

Quality control was performed using patients' blood samples to ascertain their blood group. Two milliliters of blood required for blood grouping was collected by venipuncture into plain tubes. Standard ABO blood group was performed using commercially prepared antisera (products of Biotech labs UK).

Statistical Analysis

Chi square (x^2) test was used to compare the occurrence of secretor status between genders. P value of less than o.05 was considered significant.

RESULTS

TABLE 1: Prevalence of secretors and non-secretors status in Kano metropolis

Sex	Secretors	Non-Secretors
Male	91 (35.55%)	38 (14.84%)
Female	89 (34.77%)	38 (14.84%)
Total	**180 (70.31%)**	**76 (29.69%)**

A total of 256 subjects were recruited comprising of 127 females and 129 males with age range of between 18 and 65 years. The mean age is 33.89 ± 13.18 years. Ninety one (35.55%) of the men were secretors while 38 (14.84%) of them were non-secretors. P>0.05 shows that there is no relationship between gender (sex) and secretors status. The relative cumulative frequency of secretors 180 (70.31%) while non-secretor status was 76 (26.69%) of the population surveyed as shown in Table 1 above.

DISCUSSION

A, B and H substances can be found in the saliva of majority of people and the ability to secrete A, B and H substances is governed by a dominant gene called Se gene. In this study, the prevalence rate of secretor status in Kano Metropolis was carried out. The result shows that the relative phenotypic frequencies were 70.31% and 26.69% for secretors (Sese/Sese) and non-secretors (sese) respectively. The findings in this study indicate that the frequency of secretors is low in the Kano similar to 60% and 64% reported by Akhter *et al.,* (2011) and Saboor *et al.,* (2014) in Dhaka, Bangladash and Karachi, Pakistan respectively compared to 86.9%, 82.3%, 78.1%, 77.44%, 76% as reported by Emeribe *et al.,* (1992) in Calabar ,Momodu *et al.,* (2020) in Sokoto, Igbeneghu *et al.,* (2015) in Oshogbo, Odeigah(1990) in Lagos and Jaff M.S (2010) in Iraq respectively from different locations were similar studies were carried out. However, the non-secretors status was found to be higher value of 29.68% compared to 22.56%, 21.9%, 17.7% and 13.10% in Lagos, Oshogbo, Sokoto and Calabar in Nigeria. Among the American Indians and Caucasians prevalence rate of 10% and 20% were reported for non-secretor status while 40%, 36% and 24% were found in Bangladesh, Pakistan and Iraq populations respectively. These findings show marked variations in racial distributions of the secretor characters.

Since the non-secretor status has been associated with occurrence of duodenal ulcer disease, higher prevalence of non-secretors in the population of Kano Metropolis may be linked to the increased cases of duodenal ulcer in the locality.

REFERENCES

- Akhter, S., Kibria, G. M., Akhter, N. R., Habibullah, M. M., Islam, S. M. K., & Zakariah, M. (2011). ABO and Lewis blood grouping with ABH secretor and non-secretor status: a cross sectional study in Dhaka. *Faridpur Medical College Journal*, *6*(1), 38-40.
- Clarke, C. A., Edwards, J. W., Haddock, D. R., Howel-Evans, A. W., McConnell, R. B., & Sheppard, P. M. (1956). ABO blood groups and secretor character in duodenal ulcer. *British medical journal*, *2*(4995), 725.
- D Adamo, P. J., & Kelly, G. S. (2001). Metabolic and immunologic consequences of ABH secretor and Lewis subtype status. *Alternative Medicine Review*, *6*(4), 390-405.
- Dacie, J. V., & Lewis, S. M. (1994). Practical textbook of Hematology. *8th Edition Church hill Livingstone Edinburgh*, 446-450.
- Emeribe, A. O., Igweagu, C. A., & Osim, E. E. (1992). ABH secretor status in saliva of Calabar Municipality residents. *East African medical journal*, *69*(1), 27-30.

- Glynn, L. E., & Holborow, E. J. (1969). Blood groups and their secretion in rheumatic fever. *Rheumatology*, *2*, 113-130.
- Greval, I. D. S., & Mulherjea, N. G. (1950). Low ISO haemagglutinin gene content of saliva in Culcatta. *Indian J Medical Res*, 38, 89.
- Igbeneghu, C., Olisekodiaka, J. M., Alabi, T., Onuegbu, J. A., Oseni, B. A., & Odaibo, A. (2015). ABH secretors status in Osogbo, Southwestern Nigeria. *Ind J Fundament Appl Life Sci. 2015c*, *5*(3), 42-47.
- Imoru, M., Ikhuenbor, D., & Muhammad, A. (2020). Evaluation of Secretor Status of ABH Antigens in the Saliva of Sokoto Residents in Northern Nigeria: A complementary Evidence of ABO Blood Groups in Forensic Science. *Tropical Journal of Health Sciences*, *27*(4), 14-19.
- Jaff, M. S. (2010). Higher frequency of secretor phenotype in O blood group–its benefits in prevention and/or treatment of some diseases. *International journal of nanomedicine*, *5*, 901-905.
- Mourant, A. E., Kopec, A. C., & Sobezak, D. (1974). The distribution of the human blood groups and other biochemical polymorphism. *2nd Edition Oxford University Press*, Oxford.
- Odeigah, P. G. (1990). Influence of blood group and secretor genes on susceptibility to duodenal ulcer. *East African medical journal*, *67*(7), 487-500.
- Saboor, M., Ullah, A., Qamar, K., & Mir, A. (2014). Frequency of ABH secretors and non-secretors: A cross sectional study in Karachi. *Pakistan journal of medical sciences*, *30*(1), 189-193.
- Turgeon, M. L. (1989). Fundamentals of Immunohematology Theory and Technique. *Lea and Fibiger*, London.

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