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A study to assess the vulnerable blood group for hypertension

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Abstract*: Background & Aim: Hypertension is one of the major health problem in the world. There are many factors like family history to life style are related with hypertension. It is a chronic asymptomatic illness, it is a major health problem. The ABO antigens play a role by influencing rennin levels(1). Since blood pressure is multi factorial, ABO antigens may indirectly influence blood pressure so ABO blood group needs to be investigated. The present study was performed to assess the vulnerable blood group for hypertension.*
Methods: The study was carried out on 2000 known or diagnosed hypertensive patients from tertiary care centre, Chennai within the age group of 30 - 80years included both males and females. Slide test for ABO and Rh typing of blood was done. Correlation of ABO blood group, systolic and diastolic blood pressure was done.
Results: Hypertension of ABO blood group was B(43.5%), followed by group O(32.5%) ,group A (18%), group AB (6%).
Conclusion: The B blood group was vulnerable blood group for hypertension.

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I. Introduction

Hypertension is a major health problem because it has no clear symptoms. It has been termed as 'Silent killer'. Blood pressure(BP) is an important cardiovascular parameter being one of the four main vital signs routinely checked by medical professionals and health care providers(2). It plays a role in the causation of coronary heart disease, stroke, other vascular complications Sir George Peckering was formulated a concept that blood pressure in population is distributed as a 'Bell shaped curve' with no real separation between normotension and hypertension (3) . 1 in 4 was suffering from hypertension as per Joint National Committee 7(4). The ABO blood group system was discovered by Landsteiner in 1900. ABO &Rh gene phenotypes vary widely across races and geographical boundaries (5,6) despite the fact that the antigens involved are stable throughout life. The importance of ABO blood group system in blood transfusion had already been established(7).

II. Materials and methods

The study was carried out on 2000 patients. Patients name, age, sex, weight, height, blood was taken. Blood pressure was measured with mercury sphygmomanometer. Hypertension can be defined & classified according to the seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and treatment of blood pressure(8).

Classification of blood pressure measurements

Category	Systolic blood pressure (mm of Hg)		Diastolic blood pressure (mm of Hg)
Normal	< 120		< 80
Pre-hypertension	120–139	or	80–90
Hypertension			
Stage 1	140–159	or	90–99
Stage 2	≥160	or	≥100

Determination of ABO blood group

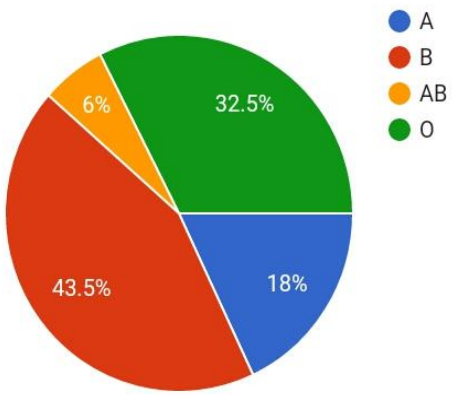
Procedure: Blood group is determined by Slide hemagglutination technique. Place a drop of serum anti-A(Blue), anti-B(yellow) and anti-D on the slide . Prick the finger with disposable needle after cleaning the area. Place a drop of blood near to anti A, anti B, anti D serum and mix them with separate applicator or stick and observe for agglutination.

Determination of blood pressure

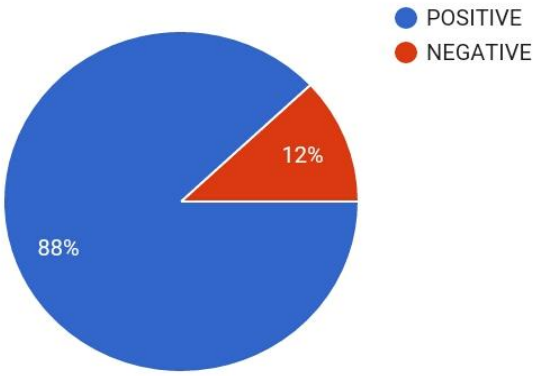
Procedure:Blood pressure measurement was done by using mercury sphygmomanometer of appropriate cuff size attached to the arm. The BP measurements were taken in a sitting position.

Results

ABO grouping



Rh typing



The blood group B was found to be most prevalent(43.5%) while the blood group AB was least prevalent(6%). This suggest that B blood group might genetically more prone to hypertension as compared to other groups.InRhesus system ,our study shows prevalence of Rh positive 88%,while Rhnegative was 12%.

III. Discussion

High blood pressure is a major public health threat in India which is rapidly increasing in both urban & rural populations(9,10) . Hypertension is common in the general population. Majority of the hypertensive subjects still remain undetected and the contol of hypertension is also inadequate(11). Thus a nonmodifiable factor like blood group can be used as a predictor for hypertension and its awareness in the population can be used to initiate life style modifications in the susceptible category.

The studies done by Tulik Chandra, MD and AshishGupta,M.Sc,PhD about Association and distribution of hypertension, obesity and ABO blood donors and Association of ABO &Rh blood groups with blood pressure: A cross sectional study in South Indian population by Dr.Shivayogappa S Teli, Dr.Parameasivam I, Dr.SenthilVelou M tells that B blood group were more susceptible for hypertension

The following study had showed that B blood group is prevalent but it is not associated with vulnerability: Blood group relationship with hypertension by Huda JabbarDibby.

"Association of ABO blood group with blood pressure among the students of Abdul Wali Khan University Mardan" by Sulaiman Shams, Human Ajmal, Shehla Khan, Sahib Gul, Hammad Hassan, ZahidaParveen,M.AridLodhi and Abdul Wadood shows that A blood group had more prone for hypertension

IV. Conclusion

This study showed that individuals with blood group B (43.5%),Rh typing positive (88%)have highest values of blood pressure indices and may be predisposed to high blood pressure
So,the vulnerable blood group for hypertension is B positive .

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