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Unveiling Blood Diversity: Abo, Rh & Rare Bombay Group

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Abstract: The heart, arteries, veins, and blood are components of the system of circulation. All cells in the human body gets both nutrients and oxygen from the blood, which also collects harmful substances like carbon dioxide and eliminates these substances from the body's tissues. A fundamental component of transfusion medicine, blood grouping plays a vital role in ensuring that blood transfusions are acceptable and secure. Furthermore, the system called ABO is major most common and important from a therapeutic perspective among all the blood type systems. The existence or disappearance of A and B antigens upon the membrane of red blood cells characterises the four major blood types: A, B, AB, and O.

Keywords: *Blood, Bombay Blood, ABO system.*

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I. INTRODUCTION

Single of the rare yet intriguing blood type variation outside of the ABO system is the Bombay blood group (hh phenotype).

The H an antigen, an intermediate to both the A and B antigens, is absent from the group, which was initially identified in Bombay (which is currently Mumbai), India. Transfusion support for particularly challenging to the persons with the Bombay blood group because they cannot accept blood products of either the ABO category

For accurate diagnosis, secure blood transfusions, and clinical results optimization especially in regions where uncommon blood groups may be more prevalent in that regions awareness of the ABO category systems keep at top priority.

Only 0.0004% of people worldwide have the Bombay Blood Group, which is the most uncommon blood category among people.

This indicates that this form of blood has been identified in just one out of every 10,000 Indians. Rare ABO blood group or HH blood type are other names for this blood type. This blood group was first identified in 1952 by Dr. YM Bhende.

Although it was first identified in a small number of Bombay citizens, this blood type is known as Bombay Blood.

The Bomba category of blood is unique in having the H antigen, which is found on almost every red cells, is particular to the Bombay blood group is exclusive to the Hh blood category, commonly referred to as the Bombay category.

The Bombay category contains anti-A, B H antibodies, and its red blood cells (RBC) carry ABH antigens. Despite not being detected in the ABO group, anti-H has been identified in the pre-transfusion test. The ABO blood type uses this H antigen as a building block. The Bombay phenotype is not having of the H antigen.

Research reports describes the identification of patients with the uncommon Bombay morphology and the hemodilution used to treat at a central Indian hospital. The incidence was found to be 0.002% in 51,924. This research focoused on blood grouping is an inexpensive procedure that needs to be performed with major purpose, combining forward and reverse grouping to make sure that no one comes into contact with the incorrect kind of exchange transfusion which could result in transfusion-related haemolysis that is lethal .(1)

The Bombay category of blood contain two traits of incredibly different characteristics on the membrane. As per evidence red blood cells and other components are not expressing common characterstics. In simple tem, it is a very nebulous kind of blood group. The incapacity of transfusing with blood specific character in to into its bloodline groups considered most clinically significant aspects for Bombay category of bloodline. Breakdown of blood cell alonh with characteristic group of three symptoms fever, flank discomfort, and reddish-brown urine

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can result in deadly haemolytic transfusion responses . Reverse grouping is suitable test used to distinguishing the different blood category to that of the rare Bombay type of blood in hospital . (2)

A study was conducted to assess the prevalence of Bombay category of blood grouping system among person who willing to donate and Patients in Peshawar with objective of evaluate the distribution of Bombay grouping among person who willing to donate and Patients at Medical University. Researcher select total of thousand fifty sample of willing donor person and patients of the hospital. The result of the study showed that 829(78.9%) were fall in O type category, 221(21.04%) were men patient 133(12.6%) and female 88(8.30%). Out of thousand fifty study participants 987 (94%) fall in Rh -positive and 63 (6%) fall in Rh- negative.(3)

A study was conducted to assess the incidence of a rare blood group at Sree Balaji medical college and hospital blood bank. The finding of the study revealed that total 8903 test was done and 0.02 percent have reported with Bombay category of blood.Although it seems limited, scanning to identify Bombay blood category O is essential to reducing infusion actions. It's also critical for enabling the donor recognize that their plasma has particular characteristics and should only be used for patients in the Bombay blood group.(4)

Individuals who carry the Bombay blood category provide a significant challenge because they are unable to obtain blood elements from a different a person's.

Due to changed coagulation factors, liver cirrhosis in these patients makes therapy even more difficult. Major elements of the blood might be protected within such individuals with careful component dosing and testing; therefore, the Bombay blood group organization and the treating team must work together.

II. CONCLUSION

Successful medical treatment and safe transfusion practices depend on an understanding of the ABO and Bombay type of category and this category of person reported rarely as compare to crucial exception to the ABO system, which is the most widely used and the foundation for most transfusion compatibility tests. Patients with the Bombay phenotype require matched donors with the same rare blood group because they carry H antigen, which make this category unrelatable to the common ABO category of system. Such blood types must be recognised and understood in order to prevent transfusion reactions and improve patient care, especially in emergency and surgical situations.

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