



IDENTIFICATION OF RARE BOMBAY NEGATIVE PHENOTYPE THROUGH IMMUNOHAEMATOLOGY WORKUP: A CASE REPORT

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INTRODUCTION

- Bombay phenotype, first reported in Bombay in 1952 by Bhende and Bhatia, is a rare blood group, characterised by absence of H, A and B antigen on red cells and presence of naturally occurring (Ig M) anti-A, anti-B and anti-H. Bombay phenotype could be Rh positive or negative.
- Genetically, Bombay phenotype individuals are said to be recessive with a homozygous hh/sese inheritance.
- Its detection requires forward and especially reverse grouping, omission of which can lead to disastrous consequences during blood transfusion.

CASE REPORT

- A 19 year old female at 38 weeks 4 days gestation (G1P0L0A0) came to Ob-Gyn OPD at SSG Hospital, Baroda on 25/09/2024. She had no presenting complaints and had come for a routine check up. She had a Hb level of 12.1 g/dl and hadn't required any PCV transfusion till date during pregnancy. Her samples were sent to IHBT department for routine blood grouping.
- Blood grouping was done using CAT (ID-Card Diaclon ABO/D + Reverse grouping). Both forward and reverse grouping (with inhouse pooled cells) was performed (FIG 1). Forward grouping showed no reaction with anti-A, anti-B and anti-D. Reverse grouping showed strong agglutination in panel A, B and O cell (Table 1). Blood grouping was repeated by test tube method which showed the same results (FIG 2). Both warm and cold autoantibody showed no reaction. Further testing was done with anti-H antisera which showed no reaction.

Table 1: Serological reactions in Bombay Negative group

ANTI-A	ANTI-B	ANTI-AB	ANTI-D	ANTI-A1	ANTI-H	A CELL	B CELL	O CELL	BOOD GROUP
0	0	0	0	0	0	+4	+4	+4	Oh NEGATIVE

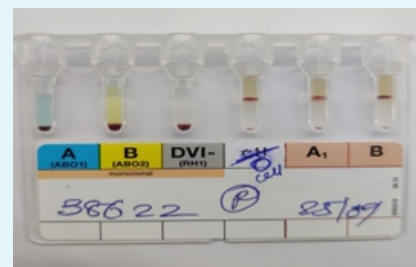


FIG 1: Blood grouping by Gel card method.

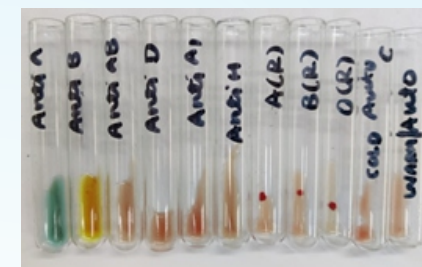
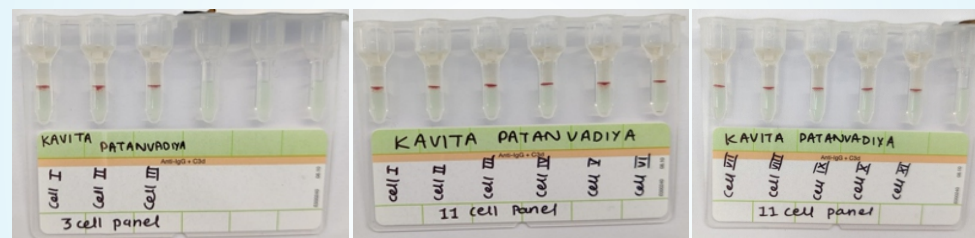
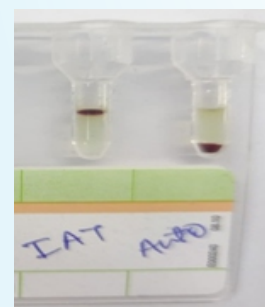


FIG 2: Blood grouping by Test tube method.



3 and 11 cell panel showed panagglutination.



IAT was performed which showed +4 agglutination. Auto control showed no reaction.

On follow-up, a healthy male child was born on 06/10/2024 through NVD without any complications or transfusion needs. His group was typed to be A Negative. (Father's blood group was A positive.)

DISCUSSION

- Bombay blood group has the highest prevalence in India with a prevalence of 0.0034%¹ in Northern India, 0.007% in southern Bengal, 0.004% in Tamil Nadu and 0.05% in Andhra Pradesh² among blood donors.
- Bombay blood group is a rarity and can be detected by the use of reverse grouping or anti-H antisera.
- This is clinically significant as arranging blood products for these patients is challenging. They can receive FFP and cryoprecipitate of any group but red cells only from same group.
- Relatives of Bombay blood group individuals should also be tested for detection of same group and should be added to the rare donor registry if possible. In this particular case, the pt's mother was A positive group and the father's group was unconfirmed due to his death 2 years ago and lack of any prior blood grouping reports.

CONCLUSION

- Safe transfusion in such cases can be ensured only through complete grouping and cross matching. An antenatal case as this one, assumes special importance as prior preparedness is required to keep rare blood products ready in case of need during delivery.
- Thus, incorporation of 'O' cells in reverse grouping and maintenance of a rare donor registry in tertiary care centers is necessary to ensure detection and availability of rare blood group products.

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