



## Anaesthetic Management of Patient with Bombay Blood Group Posted for Elective Resection of Ovarian Mass

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### ABSTRACT

*Bombay blood group is genetically inherited condition due to absence of fucosyl transferase enzyme. Bombay blood group also known as Oh phenotype: h/h in which no H antigen is present on RBC membrane. So this patient will not have A and B antigen, but will have anti A, anti B and anti H antibody in their blood. They can not receive any of the blood unit from any of ABO blood group. Here we present anaesthetic management in patient with Bombay blood group posted for elective resection of ovarian tumor under general anaesthesia and epidural analgesia.*

**KEYWORDS : Bombay blood group, Ovarian tumor resection , Anesthetic management.**

### INTRODUCTION

The Bombay blood group, is a rare blood type also known as the h/h blood group. This blood phenotype was first discovered in Bombay, in India, by Dr. Y. M. Bhende in 1952 so known as Bombay blood group. It occurs in four per million in the world and one per 10000 in certain places in Bombay. All RBC will have H antigen except Bombay blood group. This H substance is biochemically produced by the binding of fucose to the surface glycoproteins and this process is catalysed by Fucosyl transferase. If N acetyl galactosamine binds to the H substance it forms the blood group A, If galactose binds to it, it will form blood group B. Absence of any binding substance to H produces the O blood group. Up till now no references are available for anaesthetic management in major surgery in such patient. Here we discuss anaesthetic management in such case.<sup>1,2,3</sup>

### CASE REPORT

A 65 kg 60 yr old female of ASA grade II was posted for elective removal of ovarian mass. Patient had c/o abdominal distension since last three months. Patient had h/o hysterectomy five years and after diagnosis of O+ve blood group she had received O+ve at that time. But within few minutes she had severe anaphylactic reaction and so blood transfusion was stopped. In our institute she was diagnosed as Bombay blood group when presented for elective laparotomy.

Patient was known case of hypertension since one and half year and taking Tab Amlodipine 5 mg and Tab Telmisartan 40 mg. All other investigations were within normal limit.

She was premedicated with Tab Lorazepam 0.5 mg at night before surgery and Tab Diazepam 2.5 mg and Tab Amlodipine 5 mg, Tab Telmisartan 40 mg on morning of surgery at 6 am. Epidural catheter was placed at L2-L3 space preoperatively. With Standard monitoring, her preoperative BP was 130/90 mm of hg, pulse 84/min, SPO<sub>2</sub> was 99%. Before induction of anaesthesia one unit of autologous blood was tapped. After giving Inj Glycopyrrolate 0.2 mg, Inj Ondansetron 4 mg IV, anaesthesia was induced with Inj Fentanyl 100 µg, Inj thiopentone sodium 350 mg and Inj Vecuronium 6.0 mg. Trachea was intubated with 8.00 mm cuffed portex endotracheal tube. Mechanical ventilation was established using Drager Fabius plus and maintained throughout the procedure. Anaesthesia was maintained with O<sub>2</sub>, N<sub>2</sub>O and 1 MAC of Isoflurane and Inj Vecuronium. Immediate after induction of anaesthesia epidural injection bupivacaine 0.125%, 10 ml was given to provide premitive analgesia and also to establish induce hypotension. surgery lasted for 3 hrs. Total blood loss was 1000ml. All

three blood were transfused without any complications. Neuromuscular blockade was reversed with 0.4 mg Inj Glycopyrrolate and Inj Neostigmine 3.5 mg. Patient was extubated after full recovery from anaesthesia. Post operative analgesia was provided with Inj bupivacaine 0.125% 10 ml with inj tramadol 50 mg epidurally twice in a day. Patient was kept under observation in ICU for one day then shifted to ward.

### DISCUSSION

Bombay blood group is inherited condition when there is point mutation in FUT 1 locus. At least one functioning copy of FUT 1 need to be present for H antigen to be produced on RBC. Classical Bombay caused by Tyr 316 Ter mutation in FUT 1. Mutation introduce stop codon that leads to truncated enzyme that lacks 50 aminoacids at C terminal end. SO enzyme will be inactive.<sup>2,3</sup>

Individuals with the rare Bombay phenotype (hh) do not express H antigen which is present in blood group O. So they cannot make A antigen or B antigen on their red blood cells, because A antigen and B antigen are made from H antigen. So they can donate RBCs to any member of the ABO blood group system (unless some other blood factor gene, such as Rhesus, is incompatible), but they cannot receive blood from any member of the ABO blood group system as they always contains one or more of A and B and H antigens, but only from other people who have Bombay phenotype<sup>1</sup>.

As in case patient's Hb was low, surgery was postponed for one and half month due to unavailability of blood. During that period patient was advised to start Tab Iron to build up her Hb. By that time two units of Bombay blood group were arranged from Pune.

On the previous day of surgery patient's CBC showed, her Hb was 11.3gm, so one unit of autologous blood was tapped in Operation room preoperatively. Thus we had kept 3 units of blood ready, as heavy blood loss during surgery was expected by gynecologist.

During cell grouping or routine grouping Bombay blood group would be categorised as O blood group they wouldn't show any reaction to anti A, anti B antibody just like O blood group. As in our patient during previous surgery, she was transfused with O positive blood group and had anaphylactic reaction with few ml of O positive Blood group. When cross matching with different blood bags of O group was done than it had showed cross reactivity or incompatibility. So reverse grouping or serum grouping has to be performed to detect the bom-

bay blood group.

Epidural catheter was also placed to adopt hypotensive technique to reduce blood loss<sup>4</sup>. Epidural injection of local anaesthetic agent provide excellent perioperative analgesia. Moreover it is one of the method of induce hypotension during surgery<sup>5</sup>. We kept systolic blood pressure 80-90 mm hg and mean blood pressure between 55-65mm of mg throughout the surgery to minimise blood loss.

#### CONCLUSION

As the bombay blood group is rare blood group, Hb status should be build up to acceptable level to tackle blood loss during surgery. Adequate amount of same type of blood group should be kept ready as this patient can not receive any other type of blood group. Also anaesthetic technique should be such that it minimize blood loss.

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