Dear Sir,

A1 and A2 are the two most commonly encountered subgroups of blood group A. A1 represents the majority of group A donors characterized by approximately 1 million A antigen epitopes per red cell, whereas A2 possesses only one-fifth the number of A antigen sites as A1. In routine testing, both A1 and A2 are strongly agglutinated by anti-A antiserum. However, A1 can be distinguished from A2 by anti-A1 lectin of Dolichos biflorus, which agglutinates A1 red cells but not A2 red cells. As the A2 phenotype reflects the inefficient conversion of H to A antigen, A2 red cells have increased reactivity with the anti-H lectin of Ulex europaeus.[1] Plasma from A_int individuals contains a special blood group transferase (UDP-GalNAc: 2'-fucosylgalactoside-a-3'-N-acetylgalactosaminyl transferase) enzyme, which is different from the enzyme in A1 and A2 plasma. This A_int enzyme shows a strong affinity to UDP-GalNAc and low affinity to 2'-fucosyllactose, which is a soluble analog of H-substance.[2] The role of subtyping group A is of critical importance when done in the setting of incompatible (A2-O) organ transplantation, as A2 organ can be transplanted to O recipient. Some studies have been performed on weak subgroups of the ABO system, but cases of “A-intermediate” (A_int) subgroup in India are underreported.

We encountered a case of a 23-year-old male who came as a replacement donor at blood bank, affiliated to the department of transfusion medicine in a tertiary care teaching hospital of Central India. About 350-ml whole blood was collected. On routine grouping, his blood group came out to be A positive. It was further tested with anti-A1 lectin which gave 1 + reaction. On further testing with anti-H lectin, it showed 4+reaction. The saliva inhibition studies showed the presence of A and H substances. Based on these results, it was typed as subgroup of A, an A intermediate (A_int) group. However, we were not able to perform molecular tests.

The A1 and A2 subgroups differ qualitatively and quantitatively, with A1 cells having 8.1–11.7 × 10^5 antigenic sites as compared to 2.4–2.9 × 10^5 antigenic sites on A2 cells.

Landsteiner and Levine were the first to recognize an additional subtype of A, which exhibited characteristics intermediate between A1 and A2, i.e., A_int. It is considered a heterogeneous subgroup which is more common in black people, with 13.7% of group A blacks being A_int.[3] The prevalence values of A1, A2, and weak subgroups in South India were reported to be 98.4%, 1.85%, and 0.01%, respectively.[4] However, there is no reported case of A_int in this region, and this would be the first reported case.

The expression of different A subtypes in red blood cells is the consequence of diverse formations of A substances by the action of three types of blood group transferase enzymes controlled by A1, A2, and A_int genes. Three different enzymes were detected when A1- , A2- , and A_int-type plasma was examined.[5] Thus, it is possible to determine the A subtypes by examining the kinetic characteristics of different α-N-acetylgalactosaminyl transferases in the plasma. Mutations in ABO alleles results in differences in the specificity and activity of transferase enzymes, leading to the addition of low levels of A immunodominant sugars to the precursor H antigen.[6] Thus, performing a molecular test or enzyme analysis would have been useful but could not be done in this case.

The importance of subtyping A blood group and identification of A_int has been highlighted by a recently published case reported during organ donor workup for incompatible liver transplantation in South India.[7] This could be the first reported case of A_int in this region. However, further studies are needed for the identification of weak A subgroups in the region.

Our report points to the need to perform molecular tests or enzyme analysis in certain cases. We also recommend that testing of all A blood groups should be mandatorily done using anti-A1 and anti-H lectin.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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