CASE REPORT

Green Plasma in a Male Blood Donor: Should We Be Concerned?

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Abstract
Green plasma often poses a dilemma to transfusion medicine specialists as transfusion of such plasma units is questioned by many clinicians.So, mostly such plasma units are discarded at the blood bank itself. This is a case of a healthy 37-year-old male blood donor who donated whole blood (double bag 350 ml) at our blood bank after fulfilling all criteria of blood donation eligibility. During component preparation, plasma of this unit appeared greenish in colour. The plasma unit was quarantined and subjected to investigations such as culture, bilirubin (total, direct, and indirect), copper and ceruloplasmin assay and coagulogram profile. All investigations came out to be normal. Donor was called telephonically to check for any medical/surgical history which can cause the possible green discolouration of plasma but donor revealed no significant information. Despite of all normal findings, the plasma unit was discarded according to department policy. This case report highlights the importance of formulation of national guidelines in India regarding the fate of collected green/discoloured plasma to avoid unnecessary discard of blood components and to maintain uniformity in clinical practices.

Key words: Plasma, Bilirubin, Ceruloplasmin, Blood donor

Introduction: Human plasma collected from whole blood is normally pale yellow in colour. However, cases of green donor plasma have been reported in the literature sporadically. Green or discolored plasma often poses a dilemma to transfusion medicine specialists regarding its usage, as no national guidelines exist in India regarding its use or discard. Most of the time, the suitability of green plasma for transfusion is questioned by many clinicians[1]. So mostly, such plasma units are discarded at the blood bank itself.

Case Report: At our blood bank, we came across a plasma unit with greenish discoloration (Figure 1). This whole blood unit was donated by a healthy, nonremunerated 37-year-old male blood donor who came voluntarily to donate blood for a relative admitted to the hospital. The donor fulfilled all criteria for blood donation eligibility, with no medical or surgical issues presently or in the past. On physical examination, he was afebrile with a pulse of 74 beats per minute, had a blood pressure of 122/86 mmHg, and weighed 56 Kg. After obtaining consent for blood donation, whole blood was collected from him in a double bag (350 ml). The visual inspection of components is a usual protocol at our blood bank. When the plasma was separated during component preparation, it appeared greenish. So the plasma unit was quarantined and subjected to investigations such as culture, bilirubin (total, direct, and indirect), copper and ceruloplasmin assays, and coagulogram. On laboratory testing, values for total serum bilirubin

were 0.6 mg/dL, direct was 0.29 mg/dL, and indirect was 0.25 mg/dL. The blood culture was reported sterile, ruling out the possibility of a *Pseudomonas species* infection. Copper (102 mcg/dL) and ceruloplasmin (40 mg/dL) levels were in the normal range. The coagulogram profile was also reported to be normal. The donor was called telephonically to check for any medical or surgical history that can cause the possible green discoloration of plasma, especially a history of medication, including sulphonamide intake, and any illness, including joint pains (rheumatoid arthritis or ankylosing spondylitis), but the donor revealed no significant history. Despite all normal findings, the plasma unit was discarded according to departmental policy, as we do not issue discolored plasma units to any patient in our hospital.

Figure 1: 1(A) showing greenish plasma 1(B) showing standard colour plasma

Discussion: On reviewing the literature, the greenish discoloration of the plasma has been associated more often with female donors on birth-control pills containing estrogen, probably causing a rise in ceruloplasmin levels and imparting a green colour to the plasma[2]. Rare cases of green plasma in males have been seen in rheumatoid arthritis and ankylosing spondylitis [3] due to elevation of ceruloplasmin, intake of drugs such as sulfonamides, and Pseudomonas aeruginosa [2] infection. Developed countries have established guidelines regarding the usage or discard of green/discolored component units; e.g., Canadian Blood Services recommends the transfusion of green colour plasma due to oral contraceptives to be safe[4]. In an interesting study done by *Cotton et al.*, the hemostatic potential of green plasma was compared to standard colour plasma, which showed that greenish plasma collected from female donors had a more hypercoagulable thr omboelastogram profile, thereby recommending the use of such plasma units in trauma and emergencies [5]. But in India, in the absence of national guidelines, such plasma units are discarded at the blood bank itself, as most of the time clinicians refuse to transfuse them, doubting the clinical safety of discolored plasma. However, as seen in this particular case and also in a few case reports in the past,[6, 7] it is possible to label these units fit for transfusion or can be sent for plasma fractionation after basic laboratory workup, as the few tests performed in this case are really cheap and readily available.

Conclusion: Despite normal laboratory findings, this plasma unit was discarded due to lack of established guidelines for usage of discolored plasma components in India. So, we recommend that there is a need for the formulation of national guidelines regarding the fate of collected green or discolored plasma to avoid unnecessary discard of blood components in resource-constrained setups. National guidelines will also help blood bankers across the country know about the basic workup to be done for such units to establish safety for transfusion and maintain uniformity in clinical transfusion practices.

Declaration of consent

The authors certify that they have obtained all appropriate consent forms from the subject/patient to be involved in the study. In the consent form the subject/patients has given his/her informed consent for his/her images and other clinical information to be reported in the journal.

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Conflicts of interest

There is no conflict of interest.

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