Adverse Reactions in Allogenic Blood Donors: Analysis of Haemovigilance Data from a Regional Blood Centre in Peshawar, Pakistan

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Donating blood is generally a safe procedure, and donors have excellent tolerance for the process. Nevertheless, undesirable adverse reactions (ARs) of varying degrees may occur for some donors during or after the blood donation process. Most ARs occur within 30 minutes of initiating a blood donation and are usually managed by simple methods.[1] The recruitment and retention of donors is negatively impacted by these ARs.[2,3] Adverse events of blood donation can be divided into two types: immediate reaction and delayed reaction.[4] The immediate ARs occur before, during or just after donation, e.g. haematoma or nerve damage that may occur during venipuncture. Delayed ARs occur any time (off-site) after donation usually up to 2-3 weeks.[5]

Vasovagal reaction (VVR) is the most frequent immediate AR which can occur with or without loss of consciousness. VVR may cause an accidental fall that results in injury. According to reports, the frequency of ARs in blood donation ranges from 0.6 to 36%, and VVR makes up about 75% of them. According to earlier research, the following factors mostly influence donation-related VVRs: weight, age, gender, first-time donor status, low body mass index (BMI), high blood pressure, fast heart rate, and insufficient sleep.[6]

It has been reported that 9% of donors who experience an adverse reaction at their first donation did not come back for the second donation.[7] Despite being reported in such low rates, further investigations should to be done to reduce such ARs as well as to promote donor safety and satisfaction. Ensuring the safety of donors is crucial for preserving a sufficient blood supply. The aim of this pilot study was to examine the frequency of adverse reactions in blood donors. Other objectives, in addition to determining the frequency, included finding out if ARs are more common during first-time donations or in family replacement donations and if the volume of blood donated (450 ml or 500 ml) has an effect on how frequently ARs occur.

A retrospective cohort analysis of whole blood donors from September to December 2023 was conducted at the Peshawar Regional Blood Centre in Khyber Pakhtunkhwa province, Pakistan. The donors were categorised into two groups: Group 1 included 8,871 donors who donated blood during September and October, while Group 2 included 9,230 donors who donated during the months of November and December. There was no change in the standard process for blood donations during the study period except that Group 1 blood donations were collected in 500 ml blood bags (with 70 ml CPDA-1) while Group 2 donations in 450 ml blood bags (with 63 ml CPDA-1). Documentation of any ARs was done as per national quality control guidelines of 2020. Microsoft Excel spreadsheets were used to computerise the data, and SPSS version 25.0 (Armonk, NY: IBM Corp.) was used for the statistical analysis.

The percentage of first-time donors in Groups 1 and 2 were 51.88% (n = 4,603) and 45.92% (n = 4,239), respectively. Similarly, the frequency of family replacement donors in Groups 1 and 2 was 84.90% (n = 7,532) and 81.70% (7,541), respectively. The overall incidence of ARs in our study was 1.85%. This was less than studies conducted in Brazil 2.3%,[8] Saudi Arabia (2.8%),[9] and India 2.5%.[10] However, three other studies reported a

lower incidence of ARs 0.2%,[11] 1.1%,[12] and 0.59%.[13] Our findings showed that first-time donors (3.16% vs 1.08%; $p < 0.0001$), family replacement donors (1.89% vs 0.97%; p=0.002), and those in Group 1 (2.32% vs 1.49%) exhibited a higher AR rate comparatively. Common mild ARs were dizziness, nausea, fatigue, and sweating without loss of consciousness. Moderate to severe ARs observed were short-term loss of consciousness, sweating with loss of consciousness, severe headache, and vomiting. Hence, first-time family replacement donors, with a higher blood collections were more prone to ARs. A study from Canada supported the notion that first-time blood donors experience higher ARs as compared to repeat donors (32% vs 14%).[14]

The aetiology of such ARs remain unclear. It has been found that even with strict blood donation criteria, ARs still do occur and with variable severity. ARs are alarming and negatively impact the donor return rate.[15] Based on the findings of this study, we can sensitise our staff at blood collection sites regarding risk factors for ARs in blood donors to prevent them. Limitations of the study include single-center study of a shorter duration. Similarly, although the Regional Blood Centre has policies and procedures regarding the identification, handling, and managing of such ARs, a clear distinction between the severities of adverse events was not established. In other words, categorising these events is subjective to the evaluation of laboratory technicians and hence, under-reporting and/or errors in reporting are expected as haemovigilance is still in a nascent stage in the province. A multi-centre study with a larger sample size is recommended.

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