



TRALI Associated Ocular Complications: A Rare Entity

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Abstract

This is a case report of a 35-year-old female who developed severe systemic and ocular complications following blood transfusion. The patient presented with phthisis bulbi in the right eye and optic atrophy with a full-thickness macular hole in the left eye after TRALI. Additionally, she developed black gangrenous digits in all four limbs.

Ocular complications following TRALI are extremely rare. This case highlights potential mechanisms including vascular occlusion, ocular ischemic syndrome, and retinal atrophy, which may contribute to such outcomes. To our knowledge, this is the first report of its kind.

Keywords: Transfusion-Related Acute Lung Injury (TRALI); Eye

Introduction

Transfusion-related acute lung injury (TRALI) is a rare but life-threatening complication of blood transfusion, characterized by acute respiratory distress and non-cardiogenic pulmonary edema. While systemic complications of TRALI are well documented, ocular involvement is exceptionally rare and scarcely reported.

Ocular manifestations associated with blood transfusion in patients with chronic transfusion-dependent conditions, such as thalassemia, include lens opacities, retinal pigmentary degeneration, and macular changes. However, ocular complications following TRALI itself have not been described. Herein, we report a unique case of severe ocular morbidity following TRALI in a previously healthy young female.

Case Report

A 35-year-old female presented with sudden, severe visual loss in both eyes following an episode of TRALI. Prior to transfusion, her visual acuity was 20/20 bilaterally. Post-transfusion, she developed acute respiratory distress consistent with TRALI, followed by systemic complications in the form of black gangrenous digits affecting both upper and lower limbs (Figure 1A, 1C).

Ophthalmic examination revealed complete loss of vision in the right eye with phthisis bulbi (Figure 1B). The left eye had a best-corrected visual acuity of 20/200, N36. Fundus evaluation showed optic atrophy with a dull foveal reflex (Figure 1D). Optical coherence tomography revealed a full-thickness macular hole with elevated margins (Figure 1E).

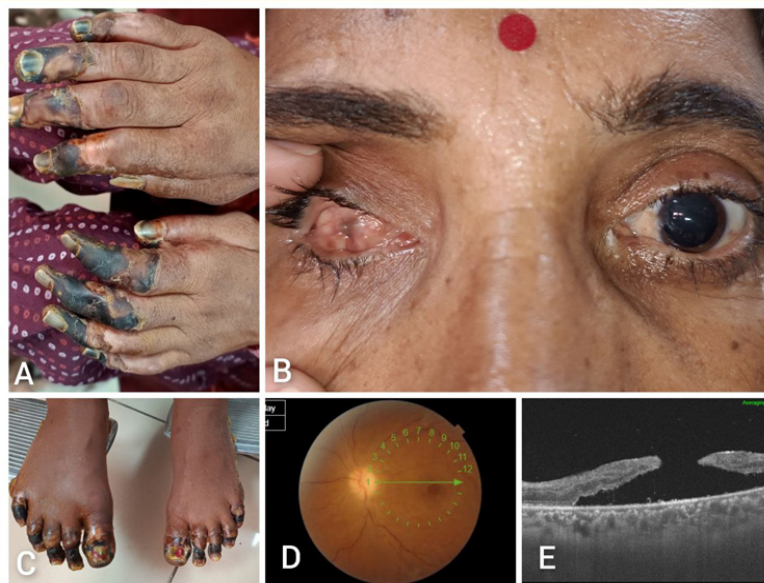


Figure 1: [A, C] Shows gangrenous digits in upper and lower limbs. [B] Phthisis bulbi of right eye. [D] Optic atrophy with dull foveal reflex. [E] OCT showing Full thickness macular hole with elevated edges.

The patient reported that ocular symptoms developed immediately after the systemic manifestations and progressed rapidly.

Discussion

The association of TRALI with ocular complications has not been previously described. The mechanisms underlying the observed findings in this case may be explained as follows:

- **Gangrenous digits:** Likely due to a hypercoagulable state induced by transfusion-related complications, leading to thrombotic occlusion of end arteries.
- **Phthisis bulbi:** Possibly secondary to ocular ischemic syndrome resulting from occlusion of medium-caliber vessels such as the ophthalmic or internal carotid artery.
- **Macular hole formation:** Could be attributed to retinal vessel occlusion and intraocular inflammation, leading to progressive atrophy of retinal layers. Retinal thinning and tangential traction may have contributed to hole formation.

Previous studies on transfusion-dependent conditions such as β -thalassemia have described lens opacities, retinal pigmentary changes, and macular abnormalities as ocular sequelae of chronic transfusions [1,2]. However, the occurrence of phthisis bulbi, optic atrophy, and macular hole immediately following TRALI has not been reported to date.

This case underscores the importance of recognizing rare ocular complications in the context of transfusion reactions, as timely identification may help in understanding underlying pathophysiology.

Conclusion

We report a rare case of severe ocular complications following TRALI, manifesting as phthisis bulbi, optic atrophy, and a full-thickness macular hole. To the best of our knowledge, this is the first report describing such associations. Further studies are required to explore the mechanisms linking transfusion reactions with ocular morbidity.

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Nil.

Conflict of Interest

No conflicts of interest.

Declaration of Patient Consent

The author certify that they have obtained all appropriate patient consent forms. In the form the patient has/have given his/her consent for his/her image and other clinical information to be reported in the journal. The patient 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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