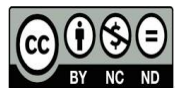


Terlipressin-Induced Toe and Foot Ischemia in Liver Transplant Patients

Dr. Manpreet Kaur

Clinical Pharmacologist, Outpatient Department, Shahkot, Jalandhar, Punjab, India.

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Abstract: Terlipressin is a medication commonly used to support blood pressure and kidney function in end-stage liver disease. While effective, its strong blood vessel-narrowing properties can sometimes lead to reduced blood supply in the fingers or toes. We present the case of a 54-year-old male liver transplant recipient who developed bluish discoloration and coldness in his feet during continuous terlipressin infusion. Stopping the medication immediately, alongside supportive care, led to a full recovery and normal limb health.

Key Word: Terlipressin; Liver transplantation; Peripheral ischemia; Acrocyanosis; Vasoconstriction; Patient safety.

I. SUMMARY

End-stage liver disease causes widespread blood vessel widening and low blood volume. Following a liver transplant, patients often experience sudden blood pressure fluctuations. Doctors use medications like terlipressin to maintain blood pressure and protect the new liver graft.

Terlipressin specifically targets blood vessels in the abdomen and liver. However, because it circulates throughout the entire body, continuous high levels can cause small blood vessels in the skin and toes to constrict too much, cutting off normal blood flow. This case report looks at why this happens, how it was treated, and what medical staff can do to prevent it.

II. PATIENT PRESENTATION

A 54-year-old male with chronic liver disease and a history of smoking successfully underwent a liver transplant. Shortly after surgery in the intensive care unit, he experienced low blood pressure and reduced kidney function.

To support his circulation, doctors started a continuous intravenous terlipressin infusion at 5 ml/hr. After 48 hours, the patient complained of severe discomfort and extreme coldness in his feet.

Upon examination, both feet and all ten toes showed a bluish tint (acrocyanosis) and felt cold to the touch. Blood refill time in the skin was sluggish (over 4 seconds), and pulses in the feet were very weak. The patient had no prior history of blood circulation disorders or diabetes.

III. TREATMENT

When the medical team noticed the signs of reduced blood flow, they took immediate corrective action with specific therapeutic interventions, detailing drug names, doses, frequencies, and their clinical uses:

- **Terlipressin:** Stopped immediately (discontinued). *Use:* Previously administered as a continuous infusion to support blood pressure and renal perfusion in post-operative liver transplant recovery.
- **Rifaximin:** 550 mg orally twice daily. *Use:* Prevention and treatment of hepatic encephalopathy by reducing gut-derived ammonia-producing bacteria.
- **Fluconazole:** 200 mg intravenously as a loading dose on day one, followed by 100 mg intravenously once daily. *Use:* Antifungal therapy targeted against diagnosed *Candida glabrata* urinary tract infection.
- **Elores:** 1.5 g intravenously every 12 hours. *Use:* Broad-spectrum antibiotic coverage for post-operative infection prevention and management of inflammatory markers.
- **Human Albumin:** 20% solution, 100 mL intravenously once daily for 3 days. *Use:* Volume expansion and maintenance of oncotic pressure to support intravascular volume and kidney function.
- **Transdermal Nicotine Patch:** 14 mg per day applied daily. *Use:* Controlled nicotine replacement therapy to manage withdrawal symptoms in a patient with a history of smoking.
- **Supportive Care:** Warm cotton blankets wrapped around lower limbs continuously. *Use:* Promotion of peripheral vasodilation and restoration of normal skin temperature in ischemic extremities.

IV. MEDICAL TESTS AND FINDINGS

Laboratory and imaging results provided clear insights into his condition:

- **Kidney and Lab Work:** Showed temporary kidney injury (elevated creatinine and urea) along with elevated inflammatory markers and infection risk indicators (procalcitonin >12 ng/mL).
- **Infection Check:** Urine cultures detected *Candida glabrata*, which was treated successfully with appropriate antifungal therapy.
- **Vascular Ultrasound:** Confirmed that main blood vessels were open and working, but showed signs of temporary vessel spasm (vasospasm) in the smaller distal branches.

V. RECOVERY AND OUTCOME

Following the removal of terlipressin and supportive warming, the patient was monitored closely every few hours. Within 12 hours, pain in his lower limbs disappeared completely. By 24 hours, normal skin temperature and strong pulses returned. Within 3 days, toe discoloration completely cleared up, and his kidney function stabilized. He was discharged home in stable condition on day 9 after surgery.

VI. DISCUSSION: WHY THIS HAPPENS AND HOW TO PREVENT IT

Terlipressin is a synthetic analog of vasopressin that acts primarily as a prodrug, gradually cleaved by endogenous endopeptidases to release lysine vasopressin. This active moiety exhibits a high binding affinity for vascular V_1 receptors located predominantly in the splanchnic circulation, leading to potent vasoconstriction of the mesenteric vessels. This mechanism effectively reduces portal venous inflow and manages hepatorenal syndrome and acute variceal bleeding. However, because V_1 receptors are also distributed across non-target vascular beds, including the skin, subcutaneous tissues, and extremities, high systemic exposure lacks absolute receptor selectivity and can precipitate peripheral microvascular ischemia.

Key factors that increase this risk include:

- **Continuous Infusions:** Continuous drug delivery maintains steady, elevated plasma concentrations of the active vasoconstrictor, eliminating the normal pharmacokinetic peaks and troughs associated with intermittent bolus administration and resulting in prolonged, unremitting receptor occupancy.
- **Post-Transplant Hemodynamic Instability:** Liver transplant recipients frequently experience acute fluid shifts, endothelial activation, systemic inflammatory response syndrome (SIRS), and heightened vascular reactivity, rendering their peripheral microvasculature exceptionally vulnerable to exogenous vasoconstrictors.
- **Underlying Comorbidities and Patient History:** Pre-existing microvascular compromise—such as a history of chronic tobacco smoking, peripheral vascular disease, or diabetes—significantly reduces baseline collateral perfusion reserves, exacerbating the risk of critical ischemia during pharmacologically induced vasoconstriction.

Clinical Takeaways for Healthcare Providers:

- **Rigorous Peripheral Monitoring:** Healthcare teams must conduct frequent, serial assessments of peripheral perfusion, routinely checking skin color, local skin temperature, capillary refill times, and distal pulse amplitudes in any patient receiving continuous vasoactive infusions.
- **Immediate Discontinuation:** At the earliest clinical manifestation of cutaneous pallor, acrocyanosis, coldness, or paresthesia, the vasoactive infusion must be stopped promptly to prevent progression from reversible vasospasm to irreversible tissue necrosis or gangrene.

Pharmacological Perspective and Mitigation Strategies:

From a clinical pharmacology standpoint, while continuous infusion provides smoother hemodynamic stabilization, it bypasses the physiological clearing windows afforded by intermittent dosing. To mitigate the cumulative burden of peripheral vasoconstriction while preserving critical visceral and graft perfusion, pharmacologists and intensivists recommend strict dose titration protocols, early weaning as clinical stability returns, or transitioning from continuous infusion to intermittent bolus administration when prolonged hemodynamic support is required. Additionally, prompt implementation of supportive warming measures and, when necessary, targeted vasodilatory therapy can rapidly reverse peripheral ischemia and ensure favorable clinical outcomes.

References

1. Akdemir, N. Ü. Postoperative hemodynamic stabilization with terlipressin: A case of. *DergiPark*.
2. Ata, F., Ahmed Osman, A. M. E., Dakhli, I., & Zahid, M. (2020). Terlipressin-induced foot ischemia. *Clinical Case Reports*, 9(1), 592-593.
3. Basheer, A., Shaleem, M., & Karoli, R. (2018). Cutaneous ischaemia following terlipressin therapy for hepatorenal syndrome: A case report and review of literature. *Journal of Clinical and Diagnostic Research*, 12(3), OD08-OD10.
4. Jasiewicz, P. Intraoperative terlipressin during liver transplantation is associated with reduced vasoactive requirements and lower postoperative troponin release. *MDPI*, 15(8), 2916.
5. Sundriyal, D., Kumar, N., Patnaik, I., Kamble, U. (2013). Terlipressin induced ischaemia of skin. *BMJ Case Reports*, 2013:bcr2013010050.