Case Report

Multilobar pneumonitis in a post-renal transplant patient: Highlighting the role of pneumococcal vaccination

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Abstract

Background: Renal transplant recipients (RTRs) are at a significantly higher risk for invasive pneumococcal disease (IPD), with an incidence rate 25 to 30 times higher than the general population. Multilobar pneumonitis, often caused by Streptococcus pneumoniae, remains a leading cause of morbidity and mortality in these patients due to the net state of immunosuppression. This case presentation and following discussion highlights the significance of pneumococcal vaccination.

Key Words: Post-renal transplant**;** MMF; Impaired immune responses; Multilobar pneumonitis

1. Case Presentation

A male patient of age 55-year-old male, with a history of Type 2 Diabetes Mellitus, hypertension, chronic kidney disease, and post-renal transplant status, presented on 17/12/2025 with fever with chills for 2 days and cough with whitish expectoration for 1 week. He had no history of breathlessness, chest pain, palpitations, decreased urine output, vomiting, loose stools, or dysuria.

On examination, he was conscious, oriented, and febrile, with mild dyspnea, pulse rate 130/min, blood pressure 160/80 mmHg, and SpO_2 92% on room air, which improved with supplemental oxygen. Respiratory examination revealed left-sided crepitations.

CT chest demonstrated multilobar pneumonitis involving the right middle lobe, left lingula, and left lower lobe, along with left basal atelectasis and cardiomegaly. He was managed with appropriate antibiotics, antivirals, and supportive care; immunosuppressant therapy (MMF) was tapered in consultation with pulmonology.

During hospitalization, he showed clinical improvement, became afebrile, and vital parameters stabilized. At discharge, his general condition was good, pulse rate was 110/min, blood pressure 110/80 mmHg, and SpO_2 95% on room air. He was discharged on modified immunosuppressant's, antihypertensives, antidiabetic medications, and symptomatic treatment, with advice to follow a diabetic diet.

Citation: Parkavi, Shirlin M. S. Multilobar pneumonitis in a post-renal transplant patient: Highlighting the role of pneumococcal vaccination. Kauverian Med J. 2026;3(5):59-62.

Academic Editor: Dr. Venkita S. Suresh

ISSN: 2584-1572 (Online)

2. Discussion

Pneumococcal Vaccine and Its Importance in Elderly Post-Renal Transplant:

Pneumococcal disease is a major cause of morbidity and mortality in elderly individuals and post-renal transplant recipients due to age-related immune decline and chronic immunosuppression.

These populations are at significantly increased risk for severe infections such as community-acquired pneumonia, bacteremia, meningitis, and invasive pneumococcal disease, which often result in prolonged hospitalization and higher mortality rates.

In elderly patients, immunosenescence reduces the body's ability to mount an effective immune response, making pneumococcal vaccination a critical preventive strategy. Vaccination has been shown to reduce the incidence of severe pneumonia, prevent complications, and lower healthcare utilization.

Post-renal transplant patients are particularly vulnerable because of lifelong immunosuppressive therapy, which impairs both humoral and cellular immunity. Pneumococcal infections in these patients may present atypically, progress rapidly, and lead to graft dysfunction, sepsis, or death.

Administration of pneumococcal vaccines—preferably the conjugate vaccine followed by the polysaccharide vaccine as per recommended schedules—provides broader serotype coverage and improved immune response, thereby offering essential protection.

Pneumococcal vaccination in these high-risk groups is safe, effective, and cost-effective. Early vaccination, ideally before transplantation or during stable post-transplant periods, along with regular review of immunization status, should be integrated into routine care. Strengthening patient awareness, clinician and pharmacist involvement, and institutional vaccination programs can significantly improve vaccine uptake and reduce preventable infectious complications in elderly and post-renal transplant populations.

3. Recommendations for Pneumococcal Vaccination in Post-Renal Transplant Patients

Post-renal transplant patients are at markedly increased risk of pneumococcal infections due to long-term immunosuppressive therapy, impaired immune responses, and the presence of multiple comorbidities.

Pneumococcal disease in this population is associated with severe clinical outcomes, including graft dysfunction, sepsis, prolonged hospitalization, and increased mortality.

4. Guideline Recommendations

- Pneumococcal vaccination is strongly recommended for all renal transplant recipients, irrespective of age.
- Vaccination should ideally be administered prior to transplantation as immune responses are better before initiation of intensive immunosuppression.
- If not vaccinated pre-transplant, pneumococcal vaccination should be given post-transplant during a stable period, typically 3–6 months after transplantation, when immunosuppression is at maintenance levels.

- A pneumococcal conjugate vaccine (PCV) should be administered first, followed by Pneumovax (PPSV23) after the recommended interval to ensure broader serotype coverage and enhanced immunogenicity.

- Revaccination with PPSV23 may be considered in selected high-risk patients as per guideline recommendations.

5. Significance in Post-Renal Transplant Patients

Pneumococcal vaccination significantly reduces the risk of invasive pneumococcal disease, severe pneumonia, and bloodstream infections in renal transplant recipients. By preventing serious infections, vaccination contributes to improved graft survival, reduced antibiotic exposure, fewer hospital admissions, and better overall patient outcomes.

Integrating pneumococcal vaccination into routine transplant follow-up, with active involvement of transplant physicians, pharmacists, and nursing staff, is essential to minimize preventable infectious complications in this high-risk population.

6. Clinical relevance to this case

This case highlights the heightened risk of pneumococcal and other respiratory infections in elderly patients with multiple comorbidities, particularly those with diabetes mellitus, chronic kidney disease, and post-renal transplant immunosuppression. Such patients are prone to severe, multilobar pneumonitis, which can lead to prolonged hospitalization, complications, and increased morbidity.

7. Pneumococcal vaccination plays a critical preventive role in this context

- It reduces the incidence of invasive pneumococcal disease and community-acquired

- pneumonia, which are common and potentially life-threatening in immunocompromised patients.

- Vaccination is especially important in post-renal transplant recipients, as immunosuppressive therapy impairs both humoral and cellular immunity, leading to atypical presentations and rapid progression of infection.

- Timely vaccination can decrease the risk of hospitalization, respiratory failure, and post- infectious complications, ultimately improving graft survival and overall patient outcomes.

- Incorporating pneumococcal vaccination into routine preventive care, along with patient education and counseling, is essential for high-risk populations like the patient described.

- In this patient, prior pneumococcal vaccination could have potentially mitigated the severity of his pneumonitis, underscoring the importance of adherence to guideline-recommended vaccination schedules for elderly and immunocompromised patients.

8. Current statistics

From May 2025 to January 2026, a total of 77 patients received pneumococcal vaccination at our facility. Of these, 14 patients were administered Pneumovax (PPSV23) and 63 patients received the pneumococcal conjugate vaccine, Prevenar (PCV). Despite the availability of effective vaccines, the overall uptake indicates a need to strengthen awareness regarding pneumococcal disease prevention. Focused education should be provided to all eligible patients, particularly those with chronic illnesses, immunocompromised status, and elderly populations.

Conducting community-based and outside vaccination camps can improve accessibility and coverage. Active involvement of patients through counseling and shared decision-making should be encouraged. Pharmacists play a crucial role in identifying eligible patients, providing vaccine education, reinforcing adherence to immunization schedules, and collaborating with clinicians to improve pneumococcal vaccination rates.

9. Conclusion

Pneumococcal vaccination plays a vital role in protecting elderly patients from invasive pneumococcal disease, pneumonia, bacteremia, and associated complications. Given the age-related decline in immunity and the high prevalence of comorbid conditions in the elderly, timely administration of the pneumococcal vaccine significantly reduces morbidity, hospitalizations, and mortality.

Strengthening vaccination coverage through patient education, proactive screening, and pharmacist-led counseling can further enhance vaccine uptake. Integrating pneumococcal vaccination into routine geriatric care is a cost-effective and evidence-based strategy to improve health outcomes, prevent avoidable complications, and enhance quality of life in the elderly population.

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