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RESEARCH ARTICLE

PNEUMOCYSTIS JIROVECII PNEUMONIA CAUSING SEVERE ARDS IN A RENAL TRANSPLANT RECIPIENT: SUCCESSFUL RECOVERY WITH EARLY SINGLE-SESSION PRONING AND HALOPERIDOL-BASED OPIOID-SPARING SEDATION

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ABSTRACT

Background: Pneumocystis jirovecii pneumonia (PJP) remains a life-threatening cause of ARDS in renal transplant recipients. We report a case successfully managed with a single proning session and benzodiazepine/opioid-sparing sedation using haloperidol. **Case:** A 25-year-old male, three years post-deceased donor renal transplant, presented with fever and progressive dyspnea. He developed severe ARDS (PaO_2/FiO_2 88) requiring mechanical ventilation. Early 16-hour proning improved oxygenation and PaO_2/FiO ratio improved to 278, avoiding repeated cycles. Sedation was maintained with propofol, fentanyl and atracurium during proning. In supine ventilation later opiod sparing sedation with intermittent haloperidol-controlled agitation was used successfully. CT chest revealed diffuse ground-glass opacities with interlobular thickening. Targeted therapy with trimethoprim-sulfamethoxazole and renal support resulted in full recovery. **Conclusion:** In selected cases of PJP-ARDS, a single early proning session and opioid-sparing sedation may achieve sustained recovery. This case emphasizes that sometimes early proning decision and opiod sparing sedation along with evidence-based management of severe ARDS help in early weaning and liberation from ventilator.

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INTRODUCTION

ARDS in renal transplant recipients carries a high mortality due to opportunistic infections and complex immunosuppression. PJP remains a common cause of respiratory failure post-transplantation. Early prone positioning and lung-protective ventilation are standard of care. However, the adequacy of a single proning session in improving outcomes has not been well described. We present a renal transplant patient with severe PJP-ARDS who improved following one proning session and haloperidol-based sedation.

CASE PRESENTATION

A 25-year-old male, three years post-deceased donor renal transplant, presented with 10 days of fever and progressive breathlessness. On admission: HR 130/min, BP 160/100 mmHg, RR 28/min, SpO_2 88% on 5 L O_2. Labs showed leukocytosis, elevated CRP, and worsening renal function. Chest X-ray showed bilateral diffuse opacities (Figure 1). HRCT revealed ground-glass opacities and septal thickening (Figures 5–6) He was started on empirical therapy: Carbapenem + Voriconazole + TMP-SMX (renal-adjusted) and SLED. After sputum DFA confirmed Pneumocystis jirovecii, injection clindamycin was added. as patient continued to have fever despite the use of TMP-SMX. Blood culture grew Achromobacter xylosoxidans sensitive to carbapenems which was already started as empirical therapy and continued. Tacrolimus was held due to toxicity and low dose steroids were started. After failed noninvasive ventilation trial, he required invasive mechanical ventilation and underwent a 16-hour prone session. Proning was done after 4 hours of ventilation in view of very high ventilatory requirement to prevent injurious ventilation. This led to improving PaO_2/FiO_2 from 128 to 278 (Figure 2) after 6 hours of prone ventilation. Agitation during supine ventilation and weaning attempts was managed with haloperidol (2.5 mg IV q8h plus 2.5 mg as needed up to maximum of 15 mg) avoiding continuous benzodiazepines or opioids. He was extubated on day 4 and discharged from ICU on day 9.

Microbiological Profile and Therapy: Sputum DFA: Pneumocystis jirovecii positive (cysts and trophozoite)

Blood culture: Achromobacter xylosoxidans (carbapenem-sensitive)

DISCUSSION

This case underscores the need for persistence in managing severe ARDS in immunocompromised hosts. Prone positioning is proven to reduce mortality, as shown in the PROSEVA trial (Guérin *et al*., 2013).

Table 1. Serial Laboratory and Inflammatory Parameters

S.No.	Investigations	Normal Range	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
1	Hb	13-17 (M) / 12-15 (F)	10.7	9.8	10.1	10.1	8.5
2	TLC	4000-100000 / cu mm	11970	15680	14850	13670	9880
3	Platelets	1.50 - 4.50 lakhs / cu m	2.22	2.22	2.47	2.59	1.5
4	Neutrophils	40-80%	79.3	90.5	90.4	93.3	93.6
5	Urea	20-40 mg / dl	103.4	112.2	154	257.4	215.1
6	Creatinine	0.6-1.2 mg / dl	3.21	3.4	4.39	5.15	3.29
7	Sodium	137-145 mmol/l	141.3	138.6	145.2	141.8	144
8	Potassium	3.2-5.7 mmol/l	5.3			5.5	4.6
9	Uric Acid	3.5 - 8.5 mg / dl	12.3			11.8	14.8
10	Calcium /	8.4-10.2 mg / dl	8.5			8.7	8.4
11	S.Proteinis	6.0-8.3 g/dl	6			3	5
12	Albumin	3.2-4.5 g/dl	3.3			3.1	3.8
13	Globulin	2.3-3.5 g/dl	2.7			2.1	2.2
14	T.Bilirubin	0.2-1.3 mg/dl	1.2				
15	Direct Bilirubin	0.00-0.4 mg/dl	0.9				
16	InDirect Bilirubin		0.3				
17	SGOT/ SGPT	14-36 U/L / 9-52 U/L	34.3 / 16.9				
18	ALP		108.3				
19	PT / INR	10-15 Sec	1.4				
20	Amylase / Lipase	30-110u/l					
21	PCT	<0.50 mg / ml	68				
22	CRP	<10..mg / dl	110				
23	TSH	0.35 - 5.50 u/ml	4.2				
24	HBA1C	< 6.0	6.3				
25	Lactate	Mmol/L	4	2		3	2.3
26	Po2 / Fio2 Ratio		88	278		180	200
27	MV Days	4					
28	Vasopressor Days	2					
39	APACHE - 2		16			24	19
x	Tacrolimus level whole blood (LC-MS/MS (more than 20 is toxic range	30.8ugm/lt					
31	ET secretion Gram stain	>25 pus cells <10 squamous epithelial cells Sensitive to carbapenem and resistant to No fungal element on KOH					
32	ET aspergillus antigen	<0.10ugm/l					
33	Pneumocystis (IFA)	Pneumocystis (IFA) positive indicates presence of cysts and trophozoites of pneumoc					
4	Aerobic blood culture	Achromobacter xyloxidans isolated 10 5					
35	ECG	Normal					
36	Echo	mild concentric LVH and IVC collapsed and ef 60%					

X – Ray Chest (AP – View)

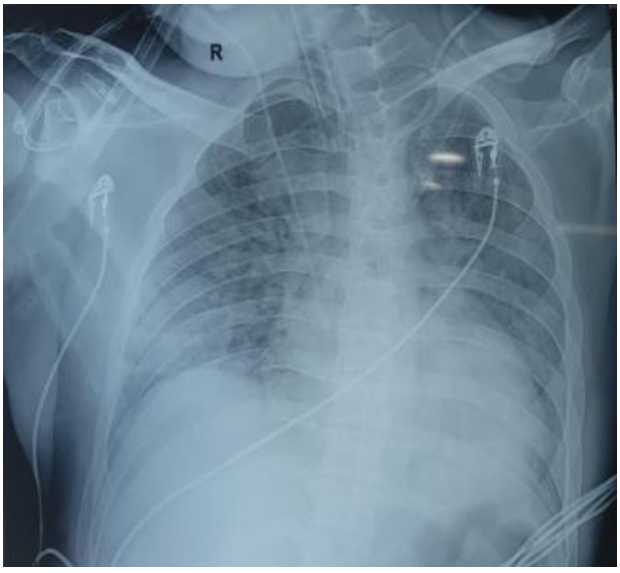

Figure 1. Chest X-ray on admission – bilateral diffuse alveolar opacities, predominantly perihilar and basal

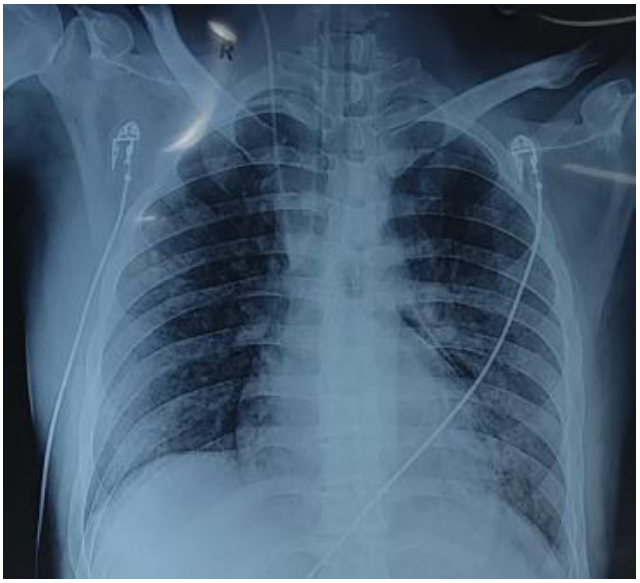

Figure 2. Chest X-ray after 16 h of prone positioning – improved aeration of both lungs and decreased patchy opacities

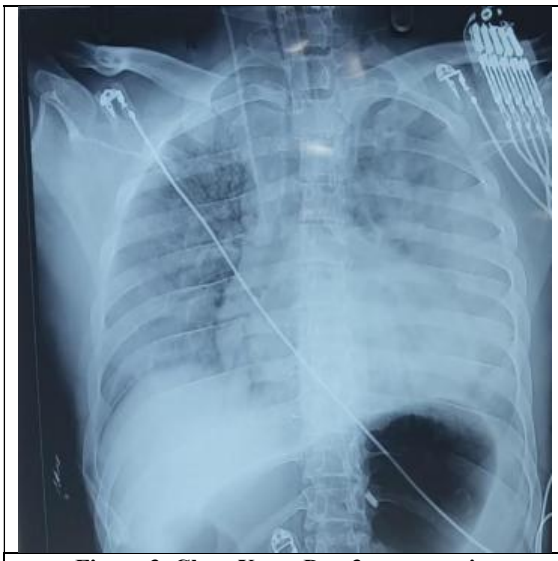

Figure 3. Chest X-ray Day 3 post-proning – continued radiological improvement

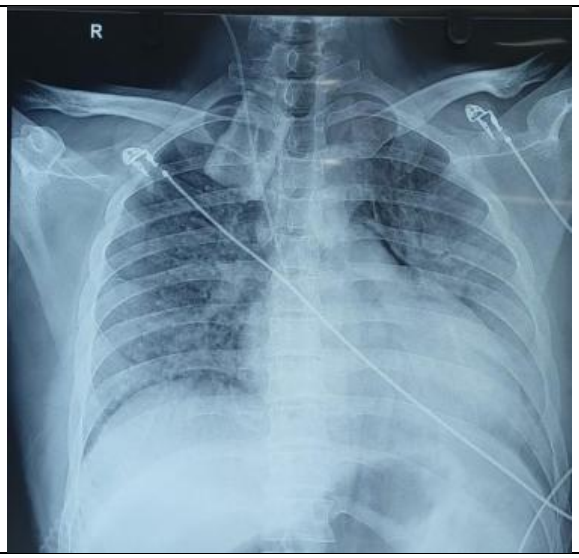

Figure 4. Chest X-ray Day 5 – near-complete clearing of infiltrates

HR CT Chest

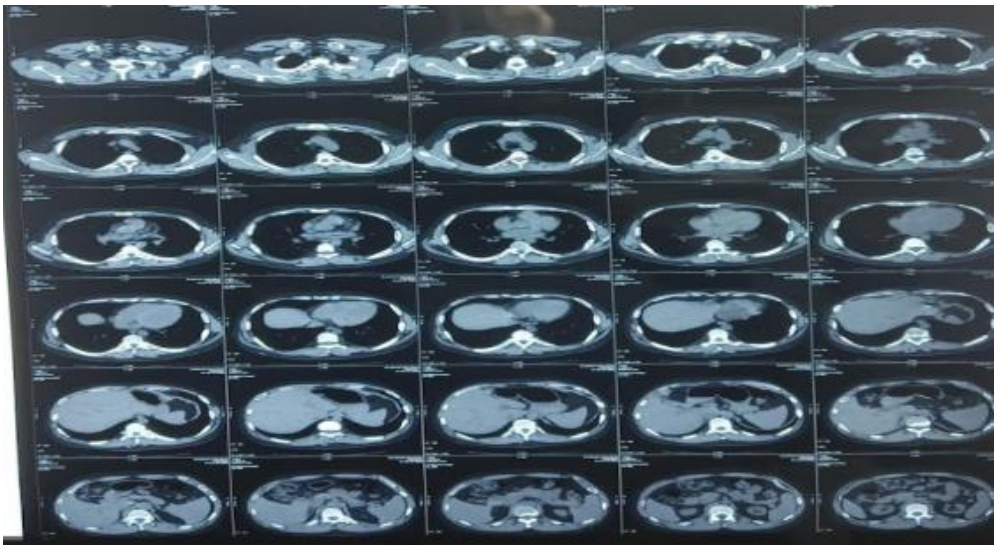

Figure 5. HRCT chest (soft-tissue window) – inhomogeneous appearance with areas of ground-glass opacities, interlobular interstitial thickening, mosaic attenuation, and right hilar node

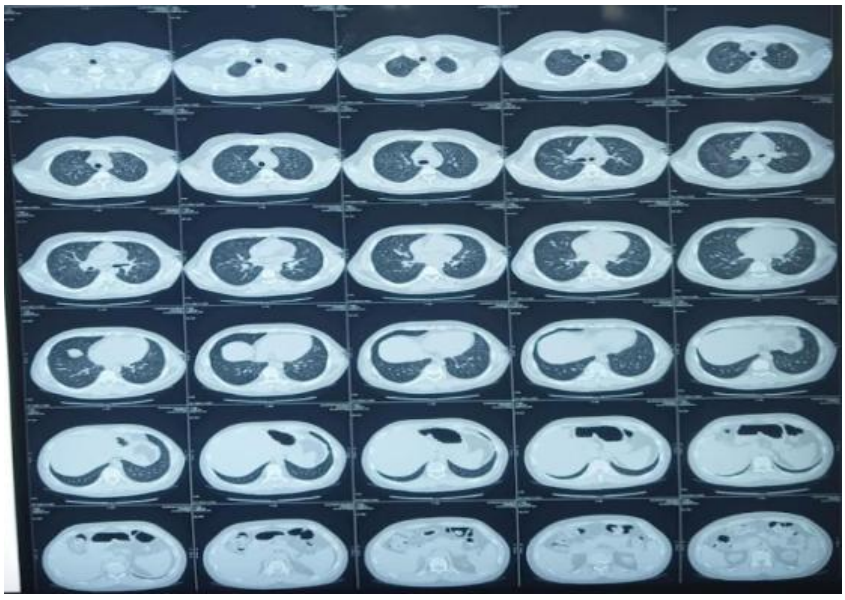

Figure 6. HRCT chest (lung window) – bilateral diffuse ground-glass opacities with fibro-atelectatic changes in basal segments (old healed changes)

Emerging evidence suggests the most significant improvement in oxygenation occurs during the first proning session (Hsu *et al*., 2025). Our patient achieved durable oxygenation gains with a single early session. Sedation practices greatly influence ICU outcomes. PADIS guidelines (Devlin *et al*., 2018) advocate light sedation and avoidance of benzodiazepines. Excessive opioid or benzodiazepine use prolongs ventilation and delirium risk (Pisani *et al*., 2009). Haloperidol remains a safe and effective agent for short-term agitation control (Andersen-Ranberg *et al*., 2023). In our patient, haloperidol allowed minimal sedation and faster weaning without respiratory depression. Despite severe hypoxemia, timely proning, infection control, and targeted sedation strategy enabled full recovery. This reinforces the message that even severe transplant-related ARDS warrants aggressive, evidence-based care rather than early therapeutic pessimism.

CONCLUSION

Early, single-session proning and opioid-sparing sedation using haloperidol led to complete recovery in this PJP-ARDS case. Adherence to lung-protective ventilation and disciplined sedation protocols can yield successful outcomes even in high-risk post-transplant patients

Patient Consent and Ethics Statement: Written informed consent was obtained from the patient's next of kin for publication of clinical details and radiographic images. Institutional ethics approval was waived for single case reporting per local policy.

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