NEPHRECTOMY IN A POST RENAL TRANSPLANT PATIENT WITH DILATED CARDIOMYOPATHY AND 25% EJECTION FRACTION



PRESENTER : DR. AMRUTA PATIL (JR-III)

CHIEF COMPLAINTS



48 year old male with right sided transplanted kidney presented with chief complains of-

- 1) Fever
- 2) Evening rise of temperature
- 3) Burning micturition
- 4) Difficulty in breathing



HISTORY



- Apparently asymptomatic 2 MONTHS back when he developed mild grade fever and burning micturition
- Recurrent UTI, treated on OPD basis.
- Not associated with pain during micturition, blood in urine, facial puffiness or swelling over limbs.
- No c/o loss of appetite, nausea or vomiting.
- Breathlessness on exertion

PAST HISTORY



- K/c/o Hypertension since 6 yrs, on medication
- Later diagnosed with **chronic kidney disease** 2 yrs back.
- On dialysis, since 1 ¹/₂ yrs , thrice weekly
- Underwent right kidney transplant 4 months back (Donor- wife)
- No h/o diabetes mellitus, tuberculosis , bronchial asthma or epilepsy .

PERSONAL HISTORY

- Sleep: Adequate
- Bowel and bladder habits regular
- No addictions.

FAMILY HISTORY

• Nothing significant

DRUG HISTORY

- Oral Fosfomycine 3 gm every 3rd day.
- Tacrolimus, Mycophenolate sodium and Prednisolone

GENERAL EXAMINATION

- Thin built, Wt.- 52 kgs, Ht- 158 cms
- Pulse rate: 104/minute, low volume, regular.
- A-V FISTULA PRESENT ON LEFT FOREARM.
- BP: 108/66 mm of Hg in right arm supine position
- No pallor, edema, icterus, palpable lymphadenopathy, cyanosis or clubbing.

AIRWAY EXAMINATION

- Adequate mouth opening and neck movements
- MPC : II, no loose teeth
- Temporo- mandibular joint mobility- normal





SYSTEMIC EXAMINATION

CARDIOVASCULAR SYSTEM

INSPECTION:

- Precordium appears normal, no pulsations or dilated veins.
- Apical impulse seen in left 6th ICS.

PALPATION:

- Inspectory findings confirmed.
- Apex beat felt in the left 6th ICS, lateral to midclavicular line

AUSCULTATION: S1 S2 heard normally, no murmurs.



• **RESPIRATORY SYSTEM :**

Air entry bilaterally equal, No adventitious sounds.



• <u>PER ABDOMEN EXAMINATION</u>:

Soft, non tender No guarding or rigidity, No organomegaly

• <u>CNS EXAMINATION :</u>

Conscious and well oriented. No focal neurological deficit

INVESTIGATIONS

HB-9.8 G %		TLC	ТЦС-7,000 / СММ			PLATELETS- 2.2 LAKH/CMM			BLOOD GROUP- B POSITIVE	
LFT S		S.BILIRUBIN		TOTAL		0.5 MG/DL				
				DIRECT		0.3 MG / DL				
S		3GPT		17 IU/L		[0-40 IU/L]				
SGC		GOT	OT		8 IU/ L		[5-35 IU/L]			
S./		S.ALP		92 IU/ L		[15-112 IU/L]				
RFT	BLOOI	O UREA	48mg%		NA	4+ -139 M MOL / L Β ⁻		BT-2	- 2 MIN , OO SEC	
	S. CREAT	ININE	1.41 MG %		K+	<+- 4.5 м.моl /L		СТ – 4 MIN. 15 SEC		
RBS 13		130 ме	30 мд %		AB	G	PH		7.41	
		10110					PCO2		39	
		40MG/DL					PO2		118.5	
PT/INR 13.6		13.6 / 1	.6 / 1.0				НСоЗ		24.2	

OTHER INVESTIGATIONS

- CXR- Clear lung fields, Cardiomegaly present
- ECG- M pattern in Lead I, III and aVL,

tall T waves and wide QRS complex in V1-V6.

• **2D ECHO** – EF 25%, dilated cardiomyopathy,

mild Mitral and tricuspid Regurgitation with mild PAH

• USG (A-P) – B/L polycystic native kidneys.

<u>Left kidney</u>: enlarged, with cysts of various sizes, having features s/o of infection or haemorrhage.

Recipient kidney: Appears normal in Right iliac fossa.



DIAGNOSIS



48 year old, post renal transplant patient diagnosed with
Infected polycystic left kidney, posted for nephrectomy.

The patient was accepted for surgery under ASA III with high risk, SICU and ventilator consent.

ANAESTHETIC CHALLENGES

- Post renal transplant patient with
 - low cardiac output and dilated cardiomyopathy
- Complications of immune suppression
- Maintain renal perfusion and prevent worsening of an already compromised renal function
- Electrolyte and Acid-base disturbances
- Position of the patient during surgery (Right lateral)
- To avoid pressor responses.
- To maintain hemodynamics close to the baseline



PREOPERATIVE PREPARATION

- Patient kept fasting from 12 midnight.
- Strict asepsis followed.
- Central venous access secured.
- Antibiotic given 1 hour before incision
- Pulse oximeter, ECG, non invasive BP cuff, CVP transducer and temperature probe were attached.
- Baseline vitals PR- 98 beats/ min BP- 110/70 mm of Hg, SpO₂- 97% on room air, Temp- 37.2 °C CVP- 15 cm of H₂O



ANAESTHESIA

- <u>PREOXYGENATION</u> with 100% O2 for 3 minutes
- <u>PREMEDICATION</u>- Inj. Midazolam 1 mg & Inj. Fentanyl 100 mcg given iv.
- <u>INDUCTION</u>- Inj Etomidate 50 mg i.v given in graded doses
- Inj Atracurium 25mg given for muscle relaxation
- Lignocaine spray was used to attenuate the pressor response
- Intubated with size 8.5 cuffed ET tube, bilateral air entry checked and tube fixed.
- <u>MAINTENANCE</u> with Sevoflurane with oxygen-nitrous oxide (40:60)



- Right lateral position given and all pressure points well padded.
- Continuous intraoperative EtCO2, CVP, NIBP, ECG and Urine output monitoring









- Intraoperatively, BP dropped to 80/54 mm of Hg.
- Inj. ephedrine 18mg given in graded dose of 6 mg each.
- Inj. dopamine infusion @ 5 µg/kg/min IV started
- Thereafter the BP improved to & maintained around 100/70 mm of Hg.
- IV fluids administered according to CVP
- Dopamine infusion was gradually tapered and stopped.

- Surgical wound infiltrated with 0.25%
 Bupivacaine for post op analgesia.
- Patient reverted back to supine position



- Reversal of anaesthesia was given with inj.
 Neostigmine (0.05mg/kg) and inj. Glycopyrrolate (0.008 mg/kg) iv.
- Patient was extubated after good respiratory efforts were seen.
- Thereafter the patient was shifted to SICU on O2
 @ 3 L/min



INTRA-OPERATIVE DETAILS

- PR 90 to 106 beats/min
- SBP 80 to 100 mm of Hg,
- DBP 56 to 80 mm of Hg
- SpO₂ 97to 100%
- CVP -13 to 15 cm of H2O
- EtCO2 38 to 42 mm of Hg
- Temperature 36.5 to 37.5°C

- Duration 2 hours 30 min
- IV fluids 400 ml NS
- Blood loss 150 ml
- Urine output 200 ml



POST OPERATIVE CARE IN SICU



- Judicious fluid administration
- Oxygen supplementation continued.
- Monitoring Sr. electrolytes and renal function tests.
- Analgesia: Paracetamol and titrated doses of opioid.
- Patient was stabilized and shifted to ward on POD5



DISCUSSION

Major concerns

- Post Renal transplant patient
- Dilated Cardiomyopathy with 25% Ejection Fraction

DILATED CARDIOMYOPATHY

A disease characterised by the left or biventricular dilatation, decreased wall thickness and systolic dysfunction.

CONCERNS :

□ Precipitation of congestive heart failure

- Arrhythmias
- Systemic embolism from preexisting mural thrombi
- □ Slow circulation time
- To maintain normovolemia
- Avoid increase in after load and drug induced myocardial depression



MANAGEMENT:

Anaesthetic agents were used in titrated doses to minimize myocardial depression.

Dopamine has positive ionotropic, chronotropic and vasoconstrictive effect making it an ideal agent to negate adverse CVS effects



POST RENAL TRANSPLANT

CONCERNS :

- Transplanted kidney is functionally denervated
 - \rightarrow loss of autoregulation
- Drug interactions and Toxicity of immunosuppressants
- Avoid nephrotoxic drugs
- Increased risk of post transplant anemia and opportunistic infections CMV most common
- Electrolyte abnormalities and prolonged elimination half life of drugs



- To maintain therapeutic levels, tacrolimus administered 4-6 hours before surgery.
- Benzodiazepines used cautiously.
- Presence of graft versus host disease, causing lymphoproliferation, may compromise airway.
- TM joint mobility may be limited.
- Number of indwelling catheters kept to a minimum and all invasive lines removed at the earliest.
- Ensure proper positioning, as patients on steroids are prone for osteoporosis.
- Paravertebral blocks can also be used for postoperative analgesia.



DRUG SPECIFIC SIDE EFFECTS

AGENT	SIDE EFFECT/TOXICITY			
Glucocorticoids	 Fluid retention Glucose intolerance Electrolyte disturbance Adrenal suppression Poor wound healing 			
Tacrolimus	 Tremors, paraesthesia Glucose intolerance Nephrotoxicity Hyperkalaemia Lower seizure threshold 			
Mycophenolate mofetil	 Anemia Hyperkalaemia Hypophosphataemia Muscular weakness 			

Management of patient with DCM and renal transplant is a challenge for an anaesthetist



- Meticulous planning
- Coordination with surgeons
- Judicious use of pharmacological agents
- Tailored anaesthesia

led to a favourable outcome ...

