



ANAESTHETIC MANAGEMENT OF PRE RENAL TRANSPLANT NEPHRECTOMY IN A CASE OF AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE WITH ATRIAL FIBRILLATION

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ABSTRACT

INTRODUCTION: Atrial Fibrillation is one of the most common arrhythmias faced during peri-operative period. AF can be pre-existing, paroxysmal or permanent. AF can lead to increased peri-operative mortality including stroke, heart failure, sudden cardiac death etc. The precipitating factors of AF like acidosis, electrolyte imbalance, sepsis, hypovolemia, hypotension etc are to be prevented and managed immediately with medical or electrical cardioversion.

CASE REPORT: Here we report a case of fifty years old male patient with Polycystic Kidney Disease resulting in End Stage Renal Disease since 17 years on maintenance Hemodialysis twice per week since 6 months, associated Hypertension since last 5 years and severe LV Dysfunction with EF-30% since 3 months with pre-existing AF posted for elective Nephrectomy under General Anaesthesia.

KEYWORDS : Atrial fibrillation, Perioperative, Arrhythmia

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CASE REPORT:

50 years old male patient with Polycystic Kidney Disease resulting in End Stage Renal Disease since 17 years on maintenance Hemodialysis twice per week since 6 months, associated Hypertension since last 5 years and severe LV Dysfunction with EF-30% since 3 months with pre-existing AF posted for elective Nephrectomy under General Anaesthesia.

EXAMINATION:

Moderate exercise tolerance
Urine output: 500ml/day
Hypertensive since 5yr, on antihypertensive medications,

DRUG HISTORY:

Tab. Digoxin 0.25mg ½ alt days.
Tab. Bisoprolol 2.5mg 1 OD
Tab. Torsemide 1omg OD
Tab Amlodipine 5mg BD
Tab Prazosin 5mg BD
Tab Warfarin 2mg OD (on hold for 5 days).

Airway-Normal

Vitals:

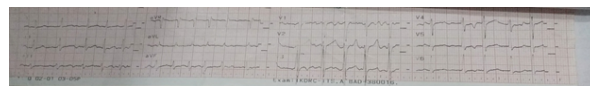
Pulse: 78/min, irregular, apex pulse deficit
B.P: 110/70
RR-20/min,
Temperature-Normal
CVS-S1, S2 present,
No Thrill/Murmurs.
CNS/RS/PA-NAD

INVESTIGATIONS:

Hb-12.9 gm%, TC: 8600, PC: 1,35000, RBS-95,
Creatinine-8.42, Na+-136, K+-5.20 LFT-Normal,

Coagulation profile – Normal.
Chest Xray- NAD.

EKG –



2D ECHO:

LVEF-30%
RVSP-25 mmHg
Dilated LV with Severe LV dysfunction.
Global LV Hypokinesia.
Fundus examination: Dot blot hemorrhage with soft exudates.

2D stress ECHO- Negative for stress induced ischemia.

Doppler neck- Normal
USG Pericardium-Normal

Cardiologist reference : Stop warfarin 5 days before surgery.

USG Abdomen:

Liver- 16.5cm, Enlarged with multiple cystic lesions.
Kidneys- Rt kidney- 21.0*14.0
Lt kidney- 22.0*14.0

Multiple variable size cysts seen in all poles of both kidney, Enlarged & polycystic

Anaesthetic management:

Pre-op hemodialysis done. morning serum electrolytes, coagulation profile, chest x-ray were normal. ECG showing AF.

The patient was NBM for 8 hrs, high risk consent taken, a 18G iv cannula was inserted, warm 1 lit NS infused. Patient was induced under general anaesthesia. Right radial artery and right IJV were cannulated and Flo-Trac system was attached. Defibrillator & all cardiac drugs were kept ready.

Inj lignocaine 75mg to prevent pressure responses.

Pre-medications: Inj ondansetron 4mg, glycopyrrolate 0.2mg, Fentanyl 150mcg.

Pre-oxygenation: with 100% O₂ for 3 mins.

Induction: Etomidate 15mg, Succinylcholine 50 mg.

Intubation: Orally with 8mm cuffed PETT tube.

Maintenance: with 0.8-1.2% Sevoflurane /50% O₂/50% N₂O/ Atracurium.

Monitoring:

IBP/PR/HR/CVP/C.O/SV/SVV/SVR/SPO₂/ECG/T/BIS/EtCO₂/Flo trac.

Duration of surgery: 2hr

Reversal: Glycopyrrolate 0.4mg, Neostigmine 2.5mg.

Extubation: Extubated under deeper plane of anaesthesia.

Intra-operatively, Fluid was infused under SVV guidance. (1.5lit) Esmolol in titrated doses was used to control the ventricular rate.

Post-operatively, the patient was shifted to Post anaesthetic care unit Hourly vitals and I/O charts were monitored for the next 24hrs.

Pain was managed post-operatively by Paracetamol infusion and IV Tramadol

DISCUSSION

Pre-existing AF is more common than new onset AF in the peri-operative period.

Factors causing intraoperative AF are:

- Hypoxia
- Hypotension
- Acidosis
- Electrolyte imbalance
- Pulmonary embolism
- Hypovolemia
- Drug induced
- MI
- Noxious stimulus

Risk of thromboembolism in AF – High

- Management of prophylaxis in CRF is complex – available data limited
- As prothrombotic state predisposing to risk of thromboembolism
- Coagulopathy with an increased tendency for bleeding.
- **INR must be adjusted within 2.0-2.5.**

Management of AF

1) Rate control

AF > 48hrs

Control ventricular rate without restoring sinus rhythm
Done by rate controlling medications like esmolol
Small initial dose and continuous infusion is appropriate.
Rate between 80-100 is desirable.

2) Rhythm control

- Generally spontaneous sinus rhythm achieved.
 - If failed then cardio-version: Medical or Electrical.
- More effective and

Goal for life threatening AF

To restore sinus rhythm

To stabilize hemodynamics

Predisposing factors for AF in ESRD.

Fluctuating levels of electrolytes during hemodialysis.
Sympathetic nervous system activation.
Modulation of renin-angiotensin system.

Age

Presence of coronary artery disease

Low ejection fraction, atrial enlargement, valvular calcification, left ventricular

hypertrophy, heart failure, hypertension, stroke.

Malnutrition, low levels of albumin, total cholesterol and HDL

Secondary hyperparathyroidism

Low predialysis systolic BP.

Duration as well as method of renal replacement therapy (more in hemodialysis patients)

In our Case

The causes of AF were: low EF, electrolyte imbalance, hemodialysis

- Pre operative rate control with bisoprolol
- Patient was on warfarin, it was stopped 5 days before surgery.
- 2DECHO prior to 2 days of surgery- to know and rule out myocardial cause of AF and thrombus.
- On day of surgery – ABG to rule out acidosis and electrolyte imbalance
- Intra operative rate control with esmolol
- lignocaine and fentanyl – to suppress intubation and extubation responses.
- Extubation at deeper plane.
- Post operative pain – paracetamol and tramadol.

CONCLUSION:

Patients with AF have the maximum risk of peri-operative complications like Thrombo-embolism, stroke, heart failure, cardiac arrest, infective endocarditis and sudden death. Proper anticoagulation, Prevention of the risk factors and immediate execution of cardioversion with drugs or defibrillator helps to manage a case of AF with reduced fatality.

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Abbreviation list:

CKD- Chronic Kidney Disease

ESRD- End Stage Renal Disease.

AF- Atrial Fibrillation.

EF- Ejection Fraction

RVSP: Right Ventricular Systolic Pressure

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