

# Chronic Renal Failure Improved After Cardiac Pacemaker Implant in A Patient of Complete Heart Block

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## CASE REPORT

A 76 years old retired bank employee was suffering from chronic renal failure for 2 years. He was carried into cardiology outpatient department by his son. He was well orientated but had severely limited mobility due to fatigue, dyspnoea and parkinsonism. This patient had all the features of chronic renal failure. He was pale, thin, wasted, dark skinned and dyspnoic at rest. His pulse was 32/min regular, all pulses were palpable. His jugular venous pressure (JVP) was raised with occasional cannon waves. He had normal 1st and 2nd heart sound alongwith 4th heart sound. His blood pressure was 180/80 mmHg He had bilateral basal creptations in lungs and tender hepatomegaly. He was being treated with salt and fluid restriction alongwith frusimide 180 mg/day and Tab. Qalsan 2 thrice a day.

### Investigations

Results of his investigations were as follows:

- Haemoglobin	7 mg/dl
- Urea	200 mg/dl
- Creatinine	5.8 mg/dl
- Potassium	5.8 mmol/l
- Serum calcium	7.6 mg/dl
- Serum alkaline phosp.	350 U/L

His chest x - ray showed cardiomegaly and pulmonary congestion. His electrocardiograph showed complete heart block with heart rate of 32/min (Fig. 1).

### Hospital course

A permanent cardiac pacemaker was implanted on 20-4-1996. He improved clinically and biochemically. He was mobilized and sent home on;

- Tab. Ibret F	Once daily
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- Tab. Sinamet	$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$
- Tab. Frusimide (80mg)	Daily

### Progress after discharge

This patient was seen in outpatient clinic after one week. He was walking without help. His blood tests including haemoglobin, urea, creatinine showed improvement. After two months all these tests were normal.

### Comments

Complete heart block results in bradycardia and increased stroke volume provided myocardium is healthy. Cardiac out-put usually is reduced because heart rate does not respond to sympathetic drive. When heart beat originates from the ventricle, which have very little sympathetic supply, systemic neuronal stimuli become ineffective. Baroreceptors also do not come into play because of strong stroke volume. In chronic complete heart block, systolic blood pressure is raised, pulse pressure is wide but overall cardiac output is low. This results in low renal perfusion, provoking compensatory mechanisms for conservation of salt and fluid. A prolonged low renal perfusion can cause damage to the kidney. This damages is reversible initially, but becomes permanent with time. The component of reversibility cannot be satisfactorily he assessed by routine investigations<sup>1</sup>. Anemia, hypocalcemia, hyperphosphatemia and other manifestation of chronicity should not be taken as signs of irreversible renal damage. All efforts should be made to improve renal perfusion to help recovery of renal function.

In complete heart block systolic blood pressure is raised with wide pulse pressure. If blood pressure is low or normal, aortic stenosis should be excluded with which it is sometimes associated.

Cardiac and kidney functions are verly closely related. A low cardiac output results in renal impairment. A correction of cardiac function could

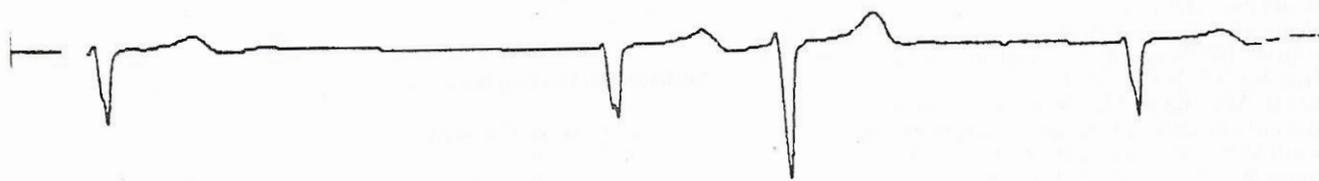
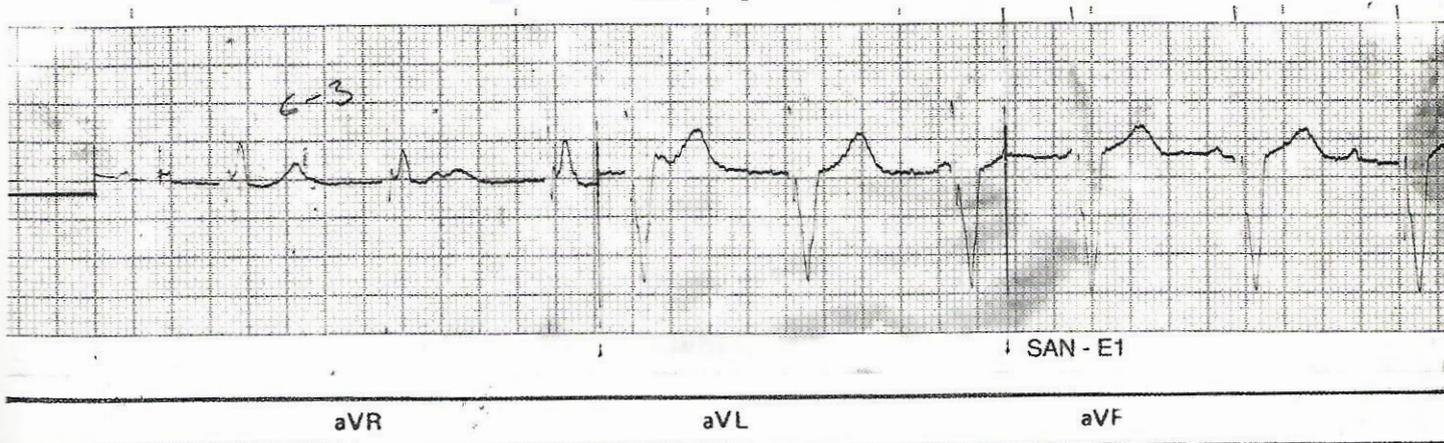


Fig. 1: ECG showing complete heart block.



aVR

aVL

aVF

SAN - E1

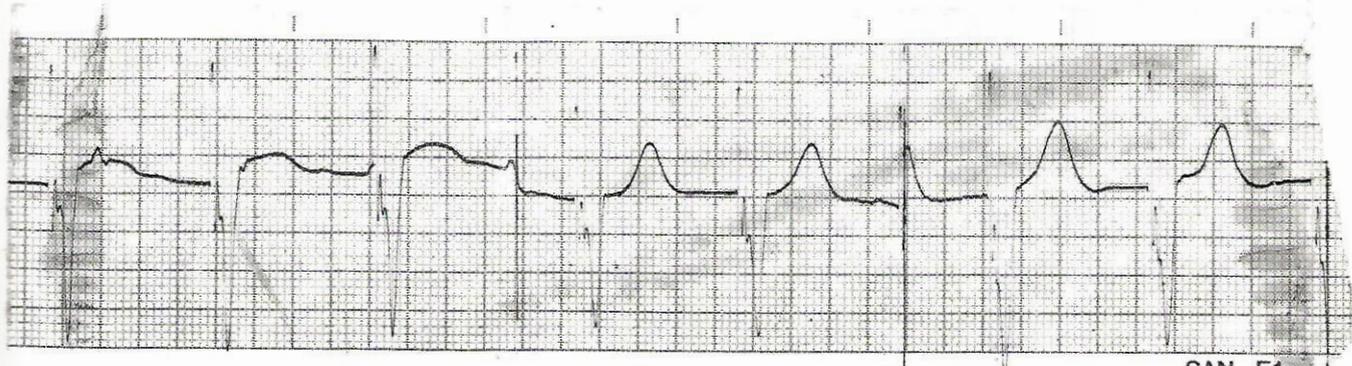


Fig. 2: ECG after cardiac pacemaker.

SAN - E1

## *Chronic Renal failure and Cardiac Pacemaker Implant*

be beneficial in such cases, as was the case in this patient.

Chronic symptomatic complete heart block is treated with permanent cardiac pacemaker. It relieves symptoms, improves quality and span of life<sup>2</sup>. Prognosis of a patient with pacemaker implant depends upon underlying disease especially Ischemic Heart Disease and its complication<sup>3-5</sup>, otherwise, patient lives happily thereafter like general population<sup>6-8</sup>.

### REFERENCES

1. Benard S. Limpan MD, Marvin I Dunn MD. AV block dissociation and reciprocal or reentrant rhythm. Lipman-Massie clini-electrocardiography. 8th Edi. 445-470, 1989.
2. Johnson BV: Longevity in complete heart block, AM, NY. Acad. Sci 167, 1031-1037, 1969.
3. Alpert MA, Katti SK, Natural history of sinus node dysfunction after permanent pacemaker implantation. South Med. J. 75: 1182-1188, 1982.
4. Stoney WS. Finger FE III. Alford WC Jr. et al. The natural history of long term pacing Ann. Thora Surg. 23, 550-551, 1977.
5. Fitzgerald WR, Graham IM, Cole T. et al, age, sex and Ischemic Heart disease as prognostic indications in long term cardiac pacing. Br. Heart J. 42: 57-60, 1979.
6. Nolan SP, Crampton RS, McGuire LB. et al. Factors influencing survival of patients of permanent cardiac pacemakers. Am. Surg. 185: 122-125, 1977.
7. McGuire LB, O'Brien WM, Nolan SP. Patient survival and instrument performance with permanent cardiac pacing JAMA, 237: 558-561, 1977.
8. Gink W. Leatham A Siddon H: Prognosis of patients paced for chronic atrio-ventricular block, Br. Heart J. 41: 633-638, 1979.

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