

Cardiac amyloidosis

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British Society For Heart Failure

November 2017

CS, Age 55

- **55 YO Caucasian female**
- **Height 163cm, weight 61kg, BMI 23**
- **Psoriatic arthritis (previously on methotrexate)**
- **Severe obstructive sleep apnoea (2015)**
- **SH:**
 - Never smoked
 - 8-10 units alcohol per week
 - Works for husband's haulage company
 - Going through marital separation

CS, Age 55

- **FH**

- No family history of cardiac disease
- 2 children (31 & 29 years old)

- **Medication**

- Selenium sulphide shampoo
- Nocturnal CPAP
- Off DMARDs for 18months

CS, Age 55

- **August 2016:**
 - Increasing SOB on exertion & peripheral oedema
 - Reduced exercise tolerance
 - BNP checked by GP = 232
 - Referred via heart failure diagnostic pathway
- **SR 90bpm, supine BP 109/77mmHg, standing BP 114/74mmHg**
- **Clinically euvolaemic with normal heart sounds**
- **Subtle macroglossia**

Discussion point 1

Use of BNP in primary care

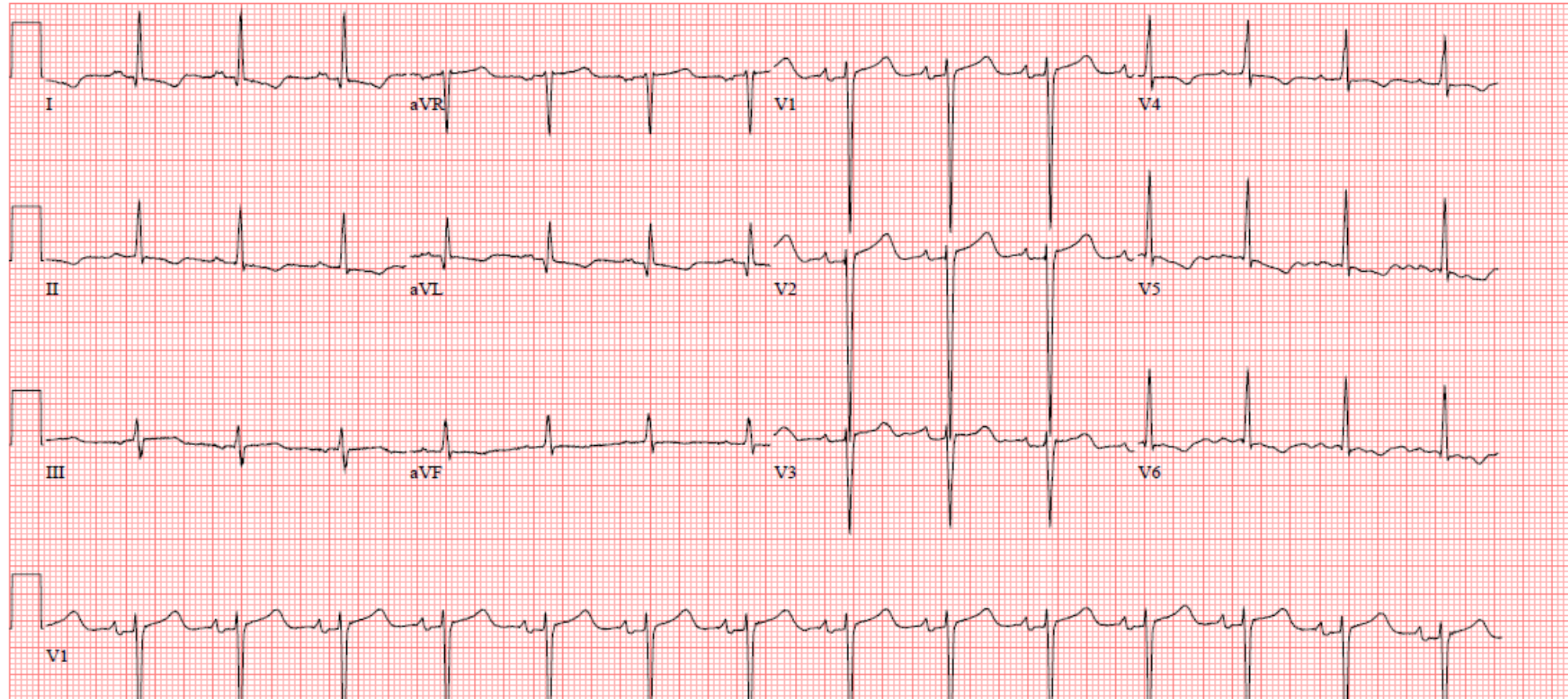
Vent. rate 87 BPM
PR interval 164 ms
QRS duration 80 ms
QT/QTc 396/476 ms
P-R-T axes 17 28 200

Normal sinus rhythm
Left ventricular hypertrophy with repolarization abnormality

Technician: 805
Test ind:

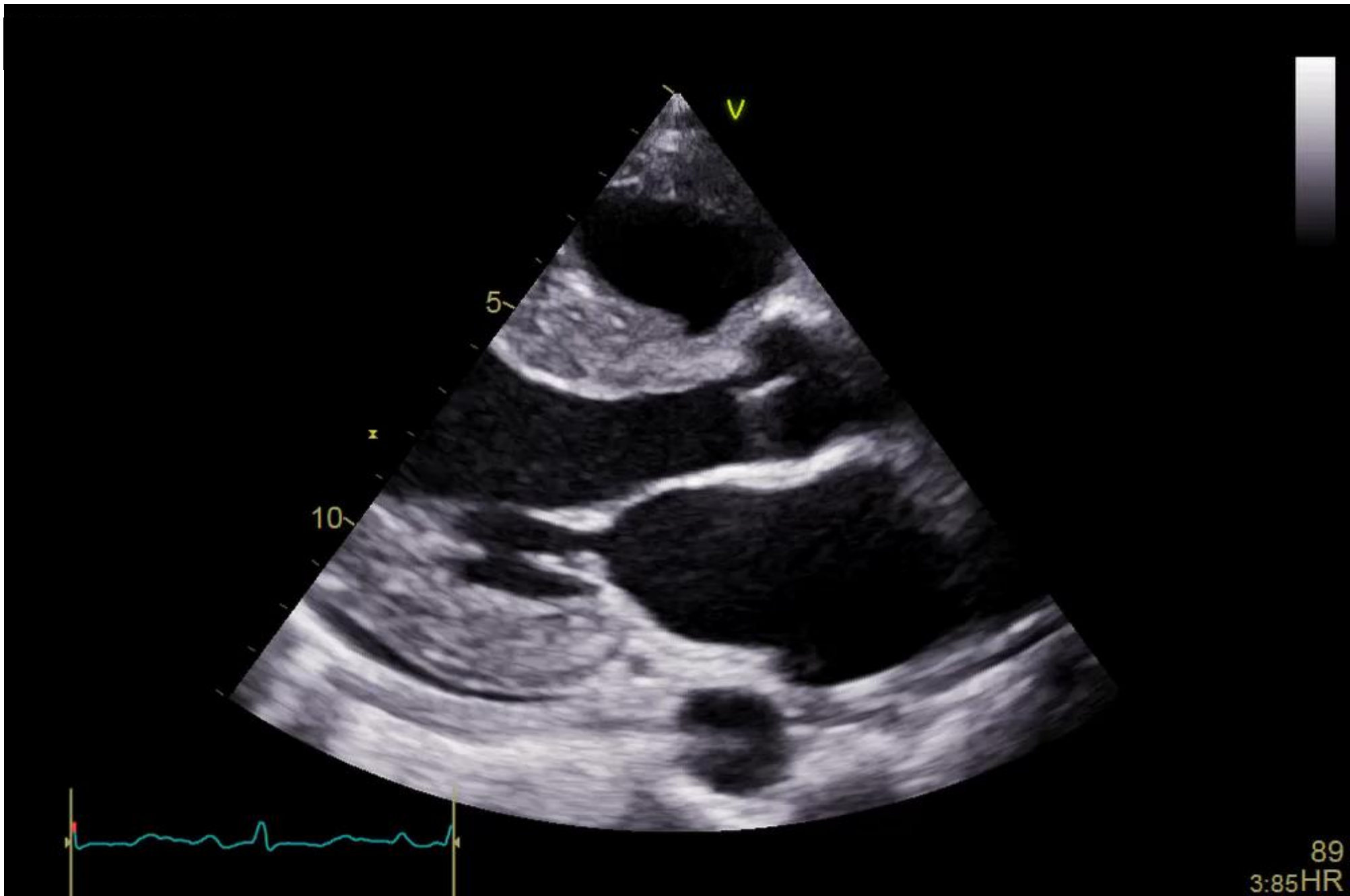
Referred by: DR MURPHY

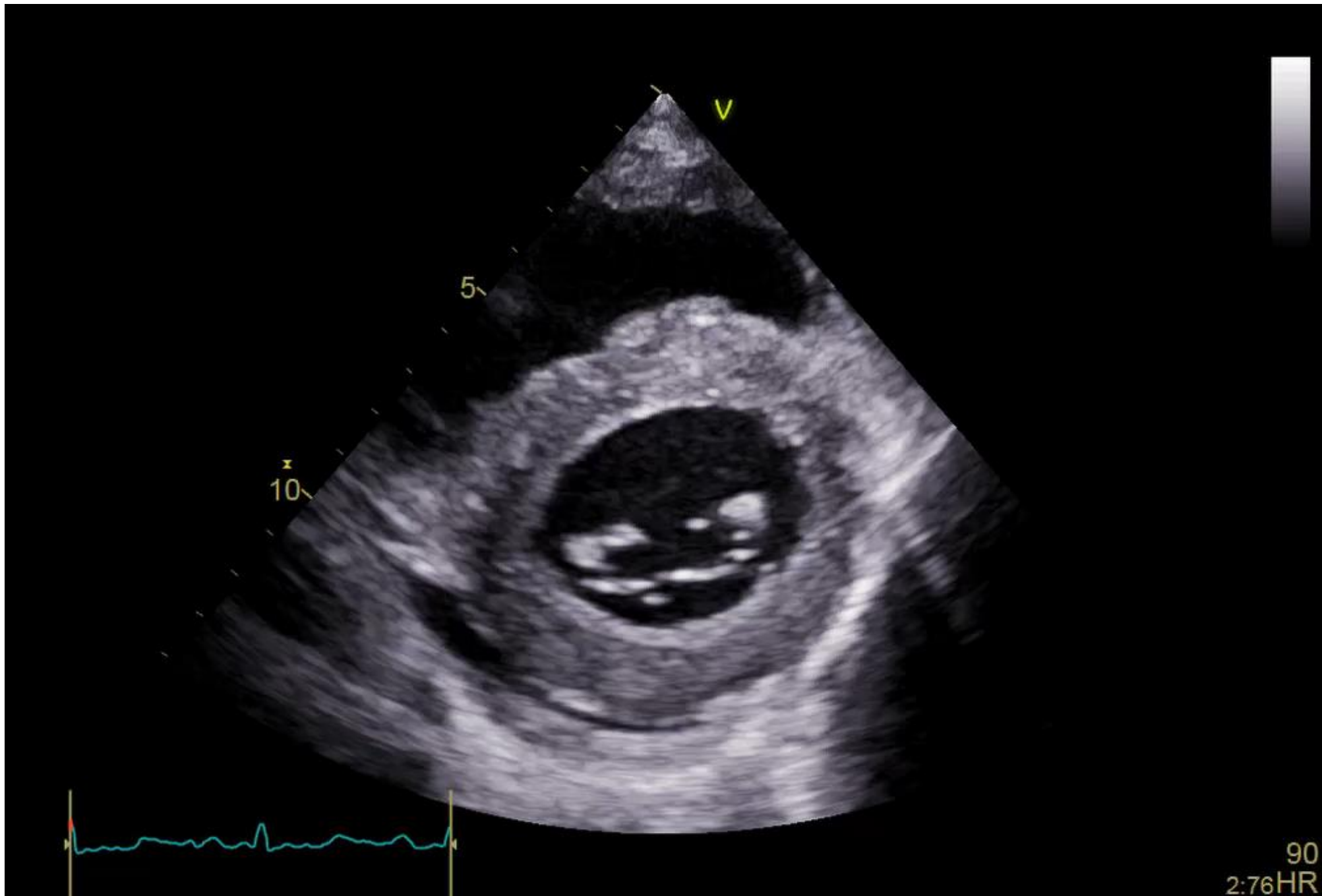
UNCONFIRMED ECG REPORT Sys Admin 21

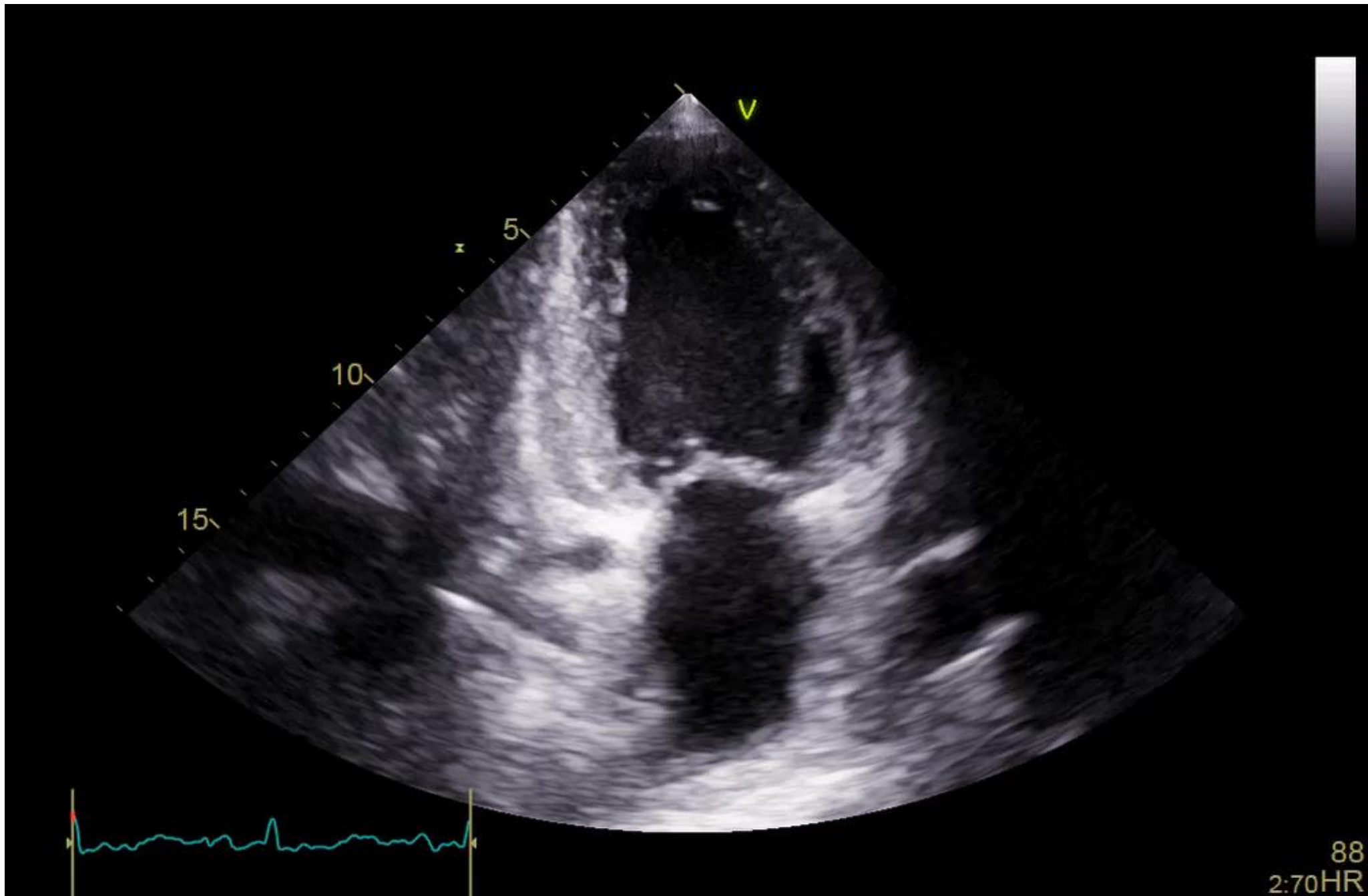


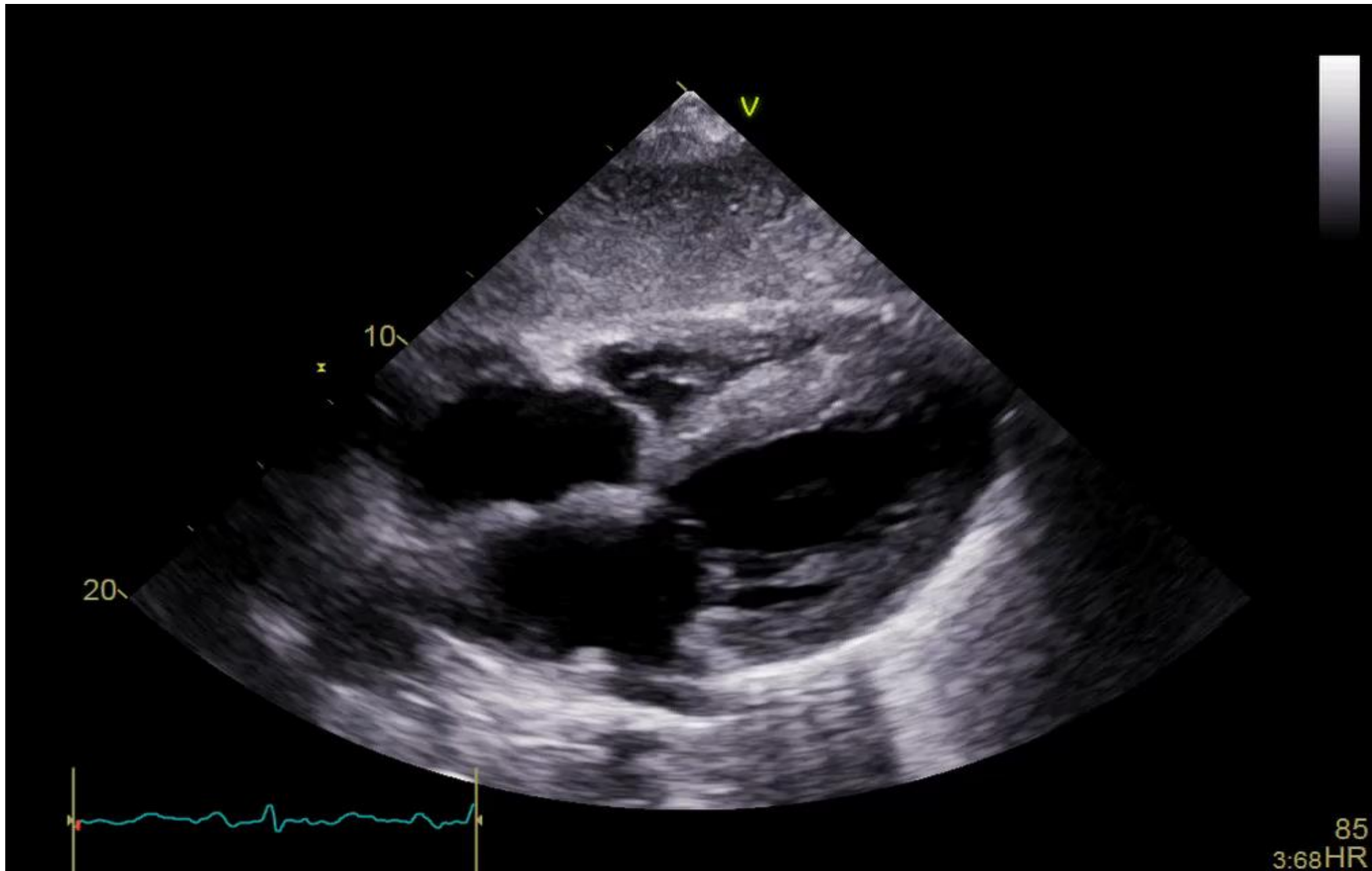
25mm/s 10mm/mV 150Hz 7.1.1 12SL 241 HD CID: 13

SID: 1543382 EID:21021 EDT: 15:02 14-SEP-2016 ORDER:







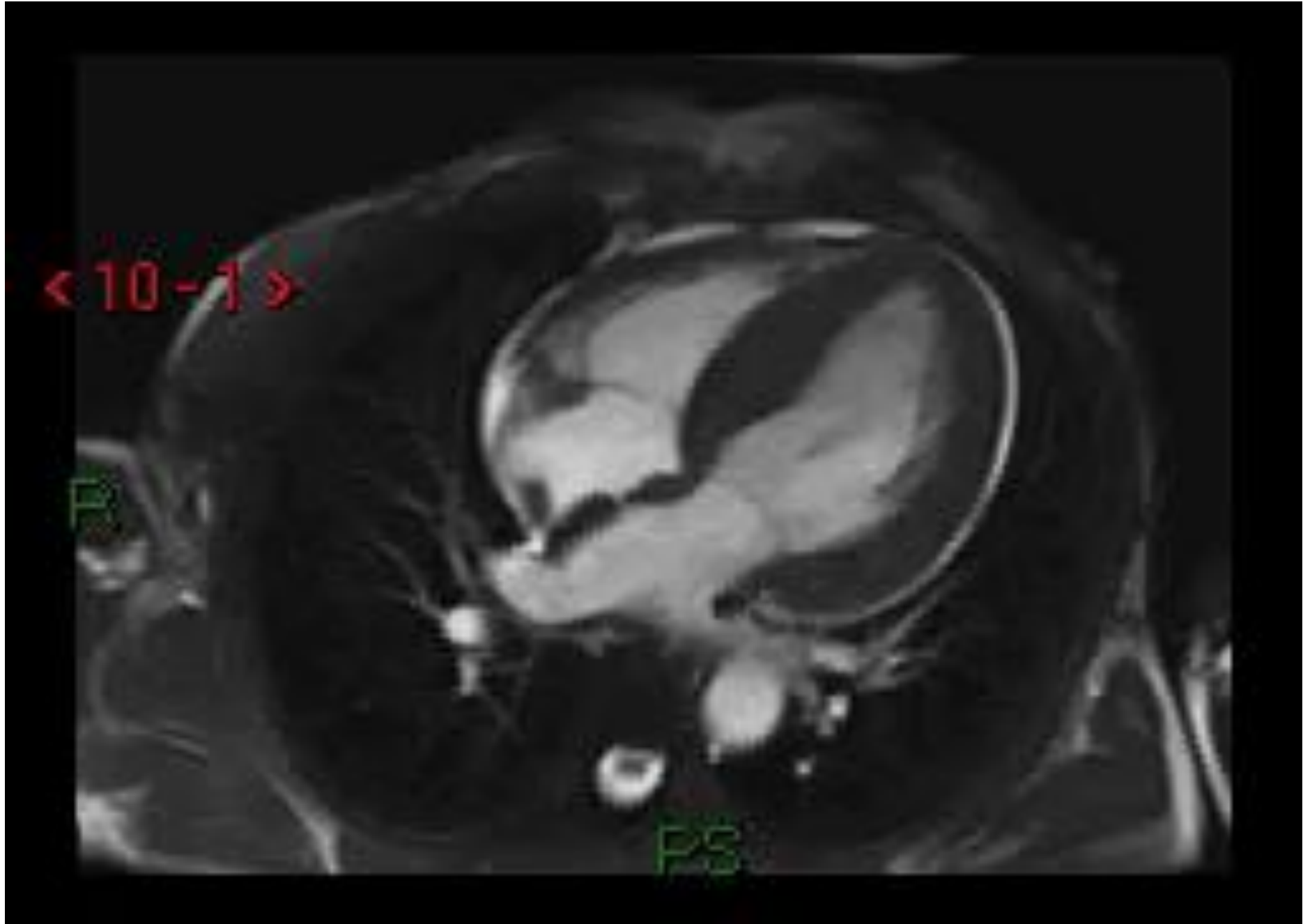


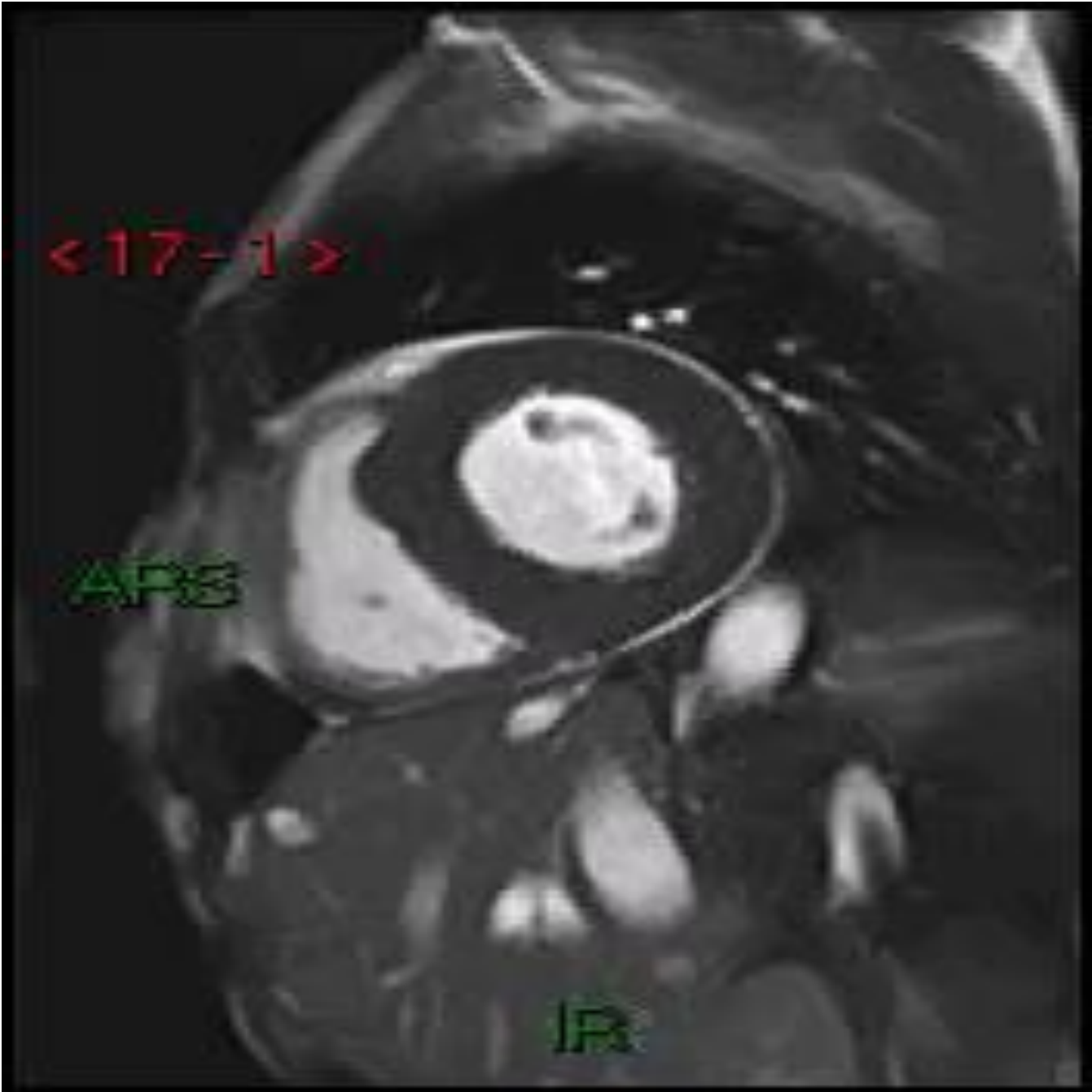
Blood results

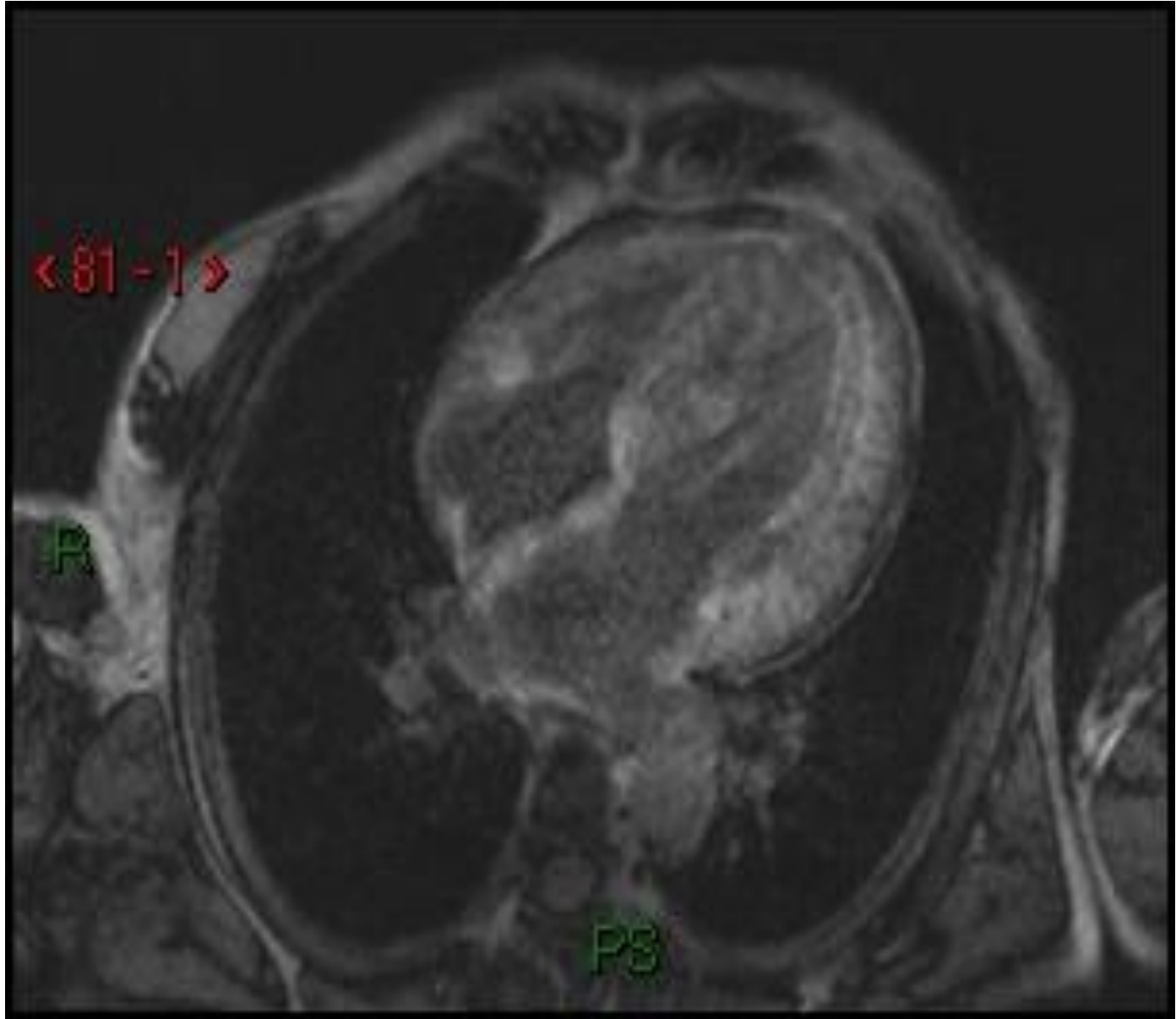
Na 141	ALT 60 (<50U/L)	Tsat 22%	IgG 4.2 (6.0-16.0g/L)
K 4.1	AST 52 (<40U/L)	CRP 3	IgA 0.78 (0.8-4.0 G/l)
Urea 6.0	Alk Phos 180 (30-130u/L)	ESR 10	IgM 0.8 (0.4-2.4g/L)
Creat 68	Alb 31 (35-50g/L)	Serum Ferritin 53	K/L Ratio 0.12
eGFR >60	Bil 8 (<20umol/L)	Serum ACE 66 (<88U/L)	Kappa 12.5mg/L
NT-pro BNP 4605ng/L	Adj Ca 2.49 (2.2-2.6mmol/L)	CK 297 (25-200U/L)	Lambda 106mg/L

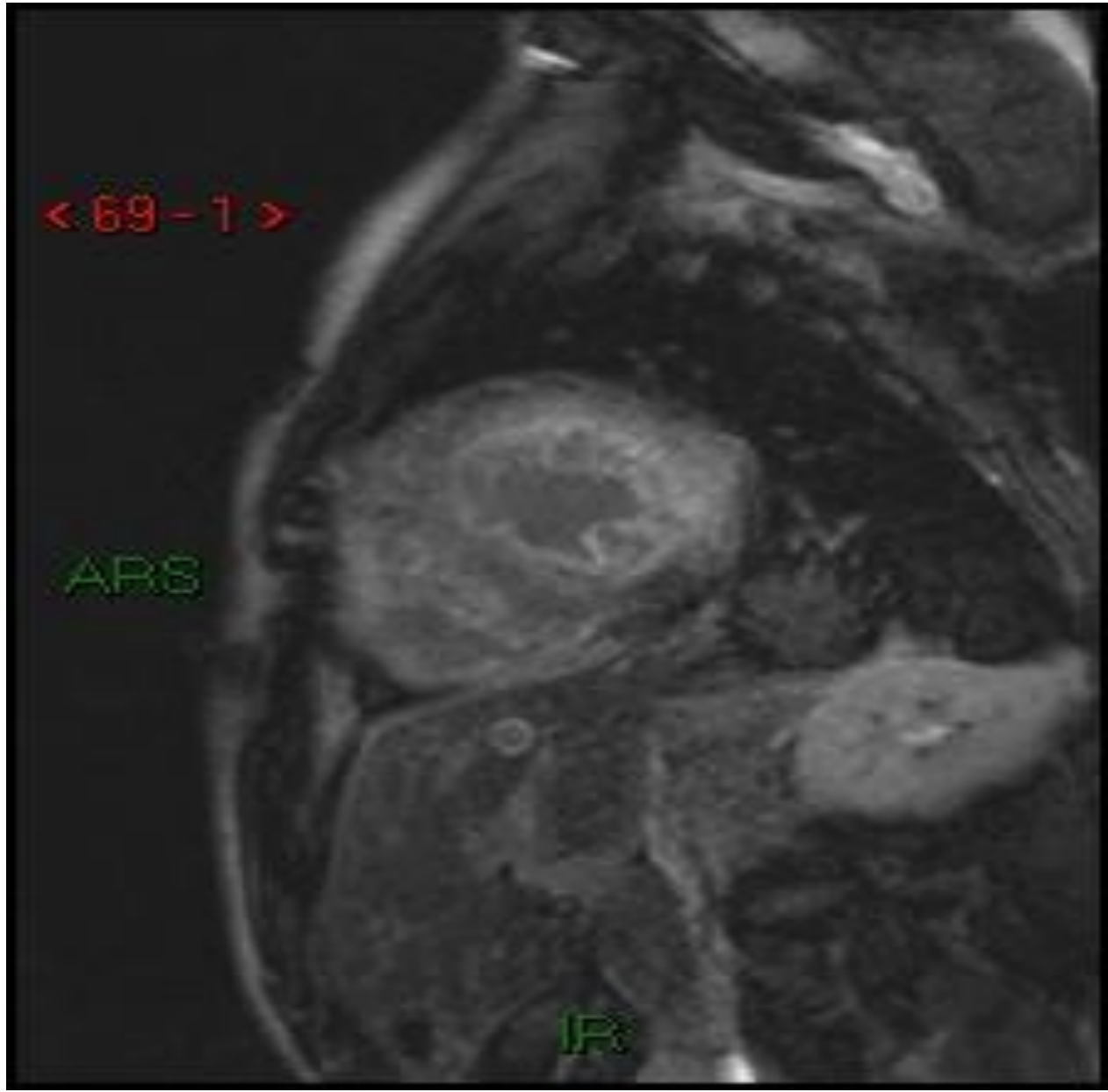
Urinalysis

- **Blood +, Protein +++**
- **Urine protein:creatinine 487 (<30mg/mmol)**
- **Urine protein 7.69 (<0.2g/L)**
- **Urine albumin >500 (<20mg/L)**
- **Urine Creatinine 15.8mmol/L**
- **Free lambda BJP detected on urine immunofixation**









Discussion point 2

CMR appearances consistent with cardiac amyloid?

Progress

- **Referred to National Amyloid Centre & local haematology team**
- **SAP Scintigraphy:**
 - No visceral amyloid deposition
- **XR Skeletal survey:**
 - No evidence of lytic lesions
- **6 minute walk test:**
 - 635metres with no oxygen desaturation

Progress

- **Fat aspirate biopsy:**

- Apple green birefringence on congo red studies when viewed under high intensity cross-polarised light
- No immunospecific staining

- **Conclusion:**

- Systemic AL (Lambda) amyloidosis with predominant cardiac involvement and probable renal involvement

Discussion point 3

Patient work-up prior to referral to National Amyloid Centre?

Progress

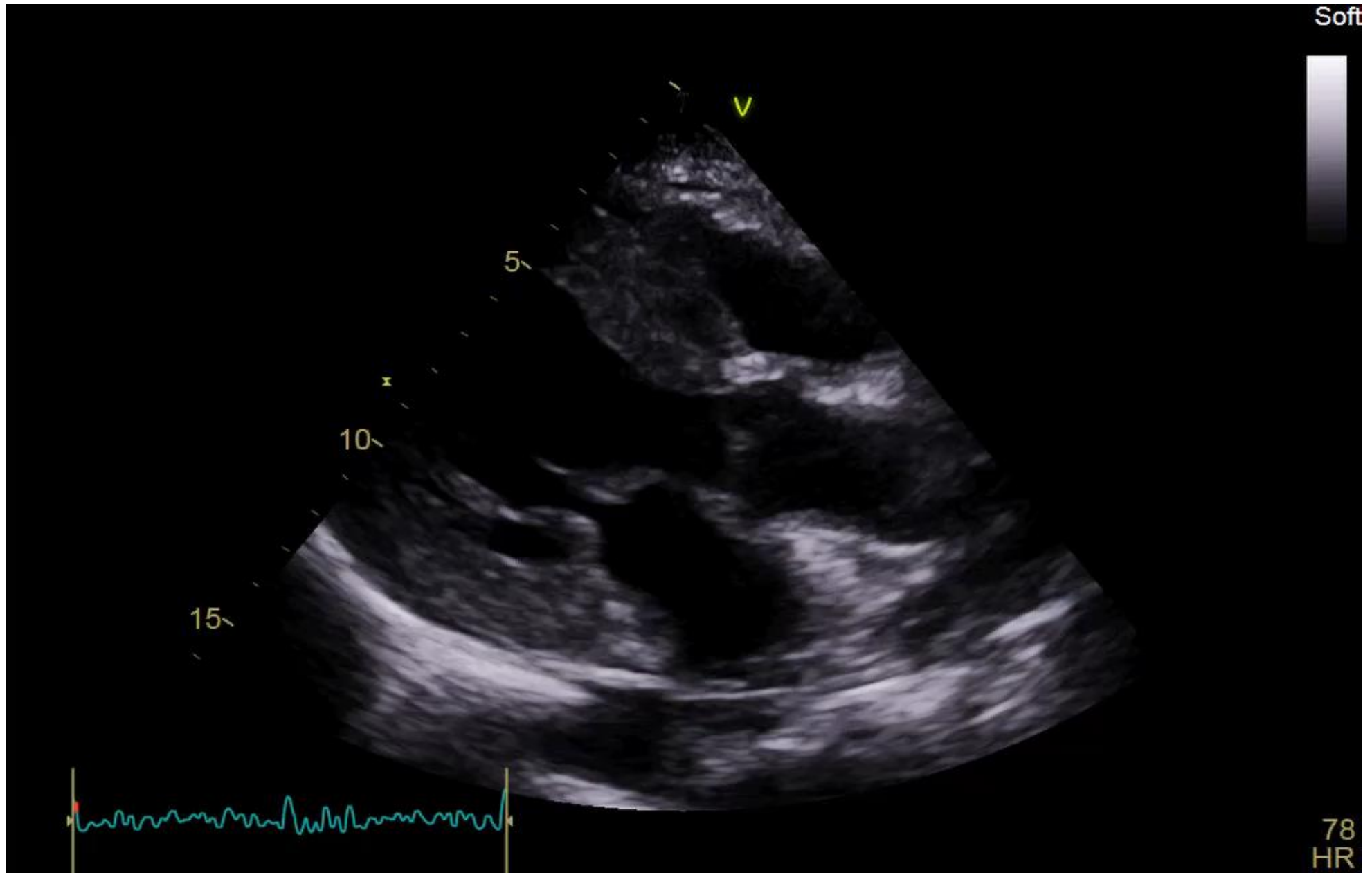
- **Bone marrow trephine biopsy:**
 - Small clonal plasma cell population, accounting for 3% of total cellularity
 - Specific stains for amyloid in BM negative
 - No evidence of co-existent myeloma
- **Commenced on velcade, cyclophosphamide and dexamethasone**
- **Supportive treatment with acyclovir, omeprazole and co-trimoxazole**
- **Doxycycline as cardiac involvement**
- **Fluid restriction/ diuretic therapy**

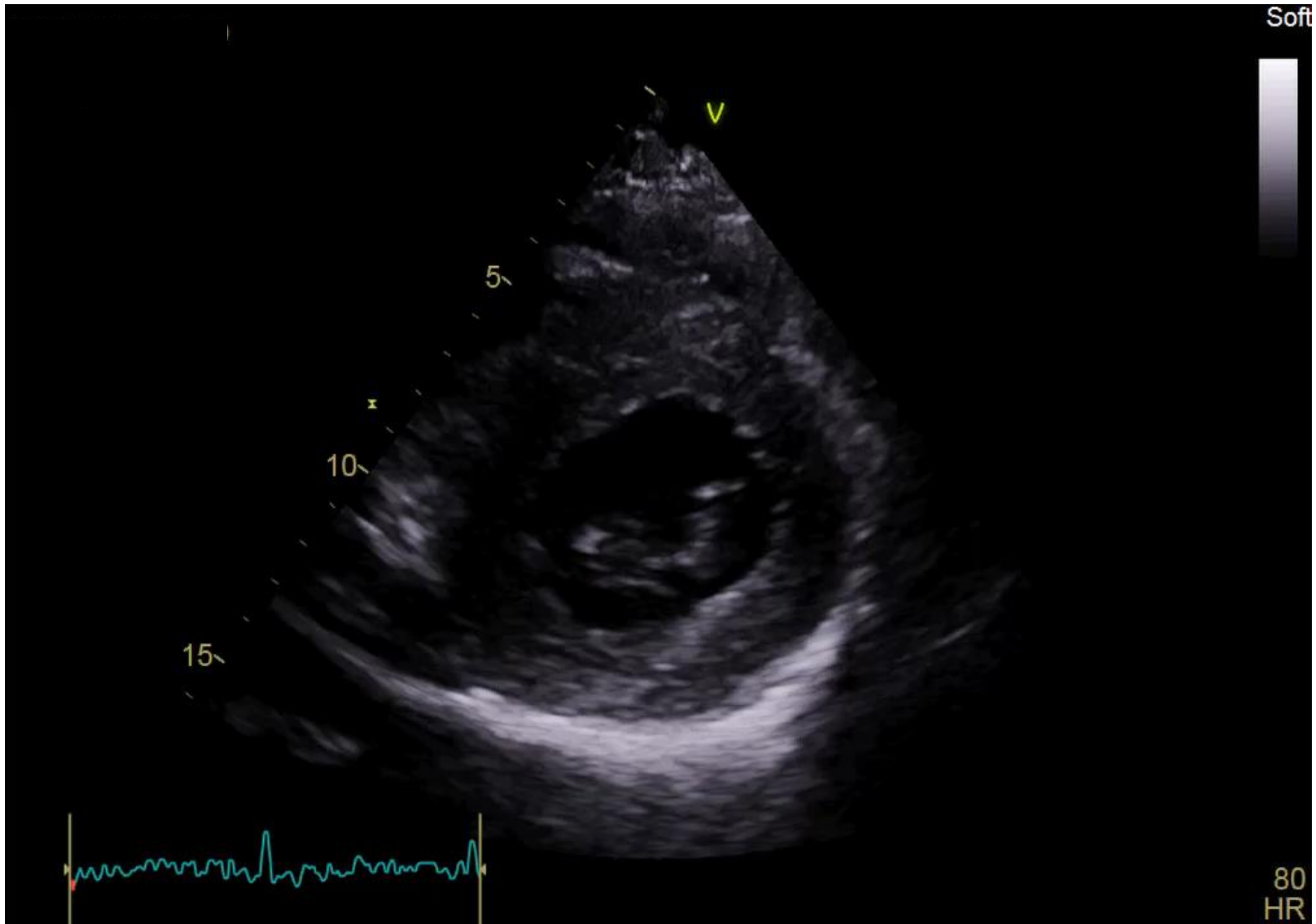
Progress

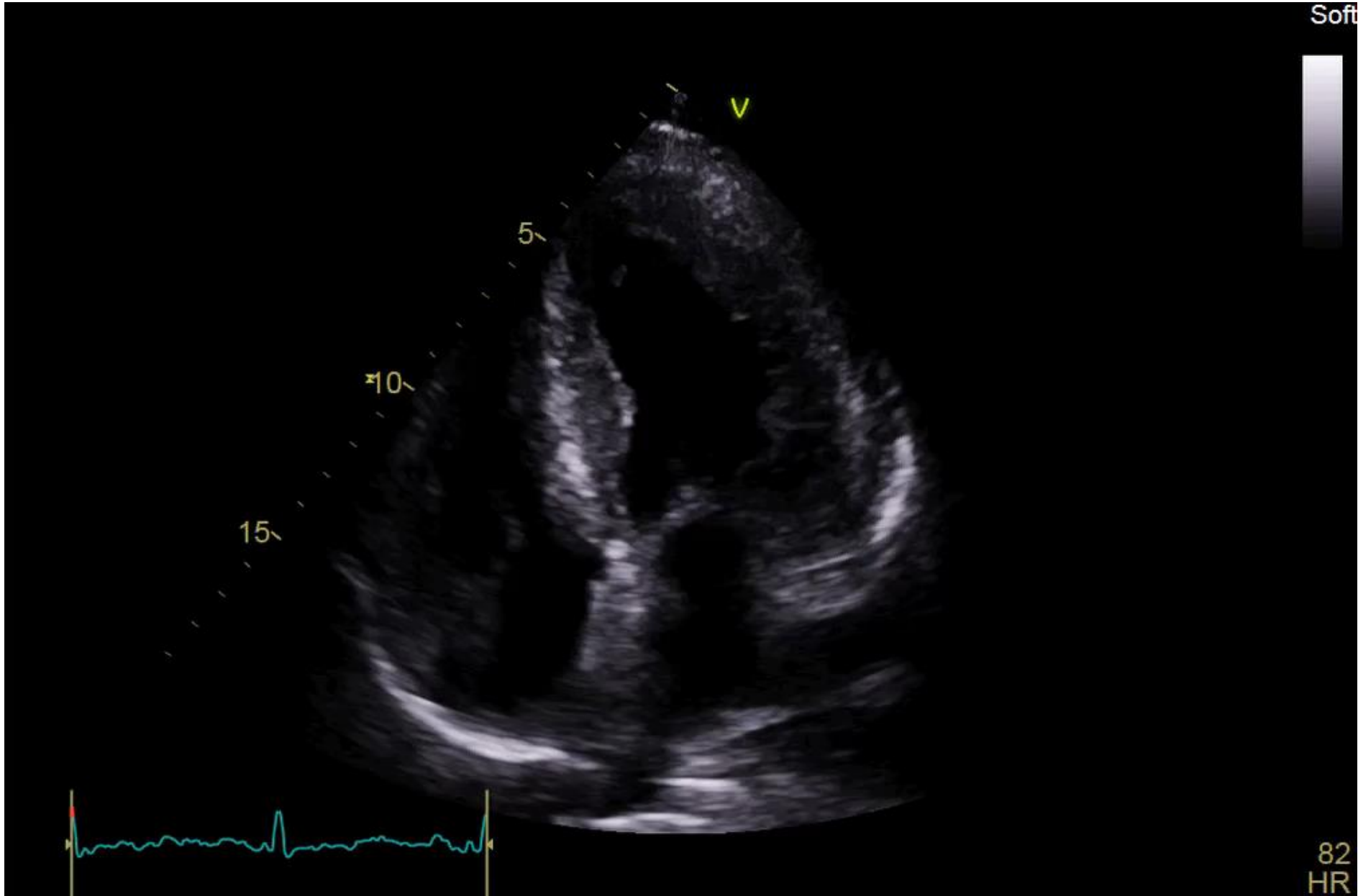
- **Minor amyloid related peripheral neuropathy**
- **Mild clinical decompensation of HF with initiation of treatment**
- **Complete clonal response with first 3 cycles of chemotherapy**
- **Protein: Creatinine ratio falling with treatment**
- **Treatment finished May 2017 (5 cycles)**
- **BNP 114**

Outcome

- **Marked clinical improvement**
- **Ramipril 1.25mg BD, Bumetanide 1mg daily (Acyclovir 400mg BD & Co-Trimoxazole for further 2 months)**
- **Serum free light chains normal**
- **Mild LVSD with calculated EF 50%**
- **Follow up with HFLS with a view to D/C**







Discussion point 4

Importance of MDT approach in patient management

AL (Light chain) Amyloidosis

- **Multisystem disease which can lead to delay in diagnosis**
- **Most common type of amyloidosis with 500-600 new cases/yr in UK**
- **Cardiac involvement is leading cause of morbidity and mortality in primary light chain amyloidosis**
- **Light chain aggregation results in restrictive cardiomyopathy**
- **Chemotherapy aimed at suppressing underlying plasma cell clone**
- **Serial measurements of free light chains to assess response**
- **Reference treatment includes alkylating agent plus dexamethasone**

Red flags signs/symptoms

- **Nephrotic syndrome**
- **Autonomic neuropathy (Postural hypotension)**
- **Soft tissue infiltration (Macroglossia, carpal tunnel syndrome)**
- **Bleeding (Cutaneous e.g. Periorbital)**
- **Malnutrition/Cachexia**
- **Syncope (Poor prognostic sign)**
- **Multisystem disease**

AL (Light chain) Amyloidosis

- **Usual treatment for HF ineffective**
- **Diuretic is mainstay of therapy**
- **Prognosis depends on spectrum of organ involvement**
- **Cardiac involvement confers poorer prognosis**
- **Early diagnosis is critical**
- **MDT approach essential**

Thank you