An Unusual Cardiomyopathy in Pregnancy

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Princess Royal Maternity, Glasgow Royal Infirmary

Presentation

- 30 year old primigravid – health care worker – 38 weeks gestation self-presented with worsening dyspnoea

- **Co- morbidities:**
- BMI 46
- Gestational Diabetes – on insulin/ metformin
- Asthma
  - Several courses of steroids and increasing use of inhalers over past few weeks – self-prescribed

- Elevated blood pressure, tachycardia 130, proteinuria, widespread oedema – admitted with likely pre-eclampsia. Also complaining of increasing breathlessness, ?worsening asthma

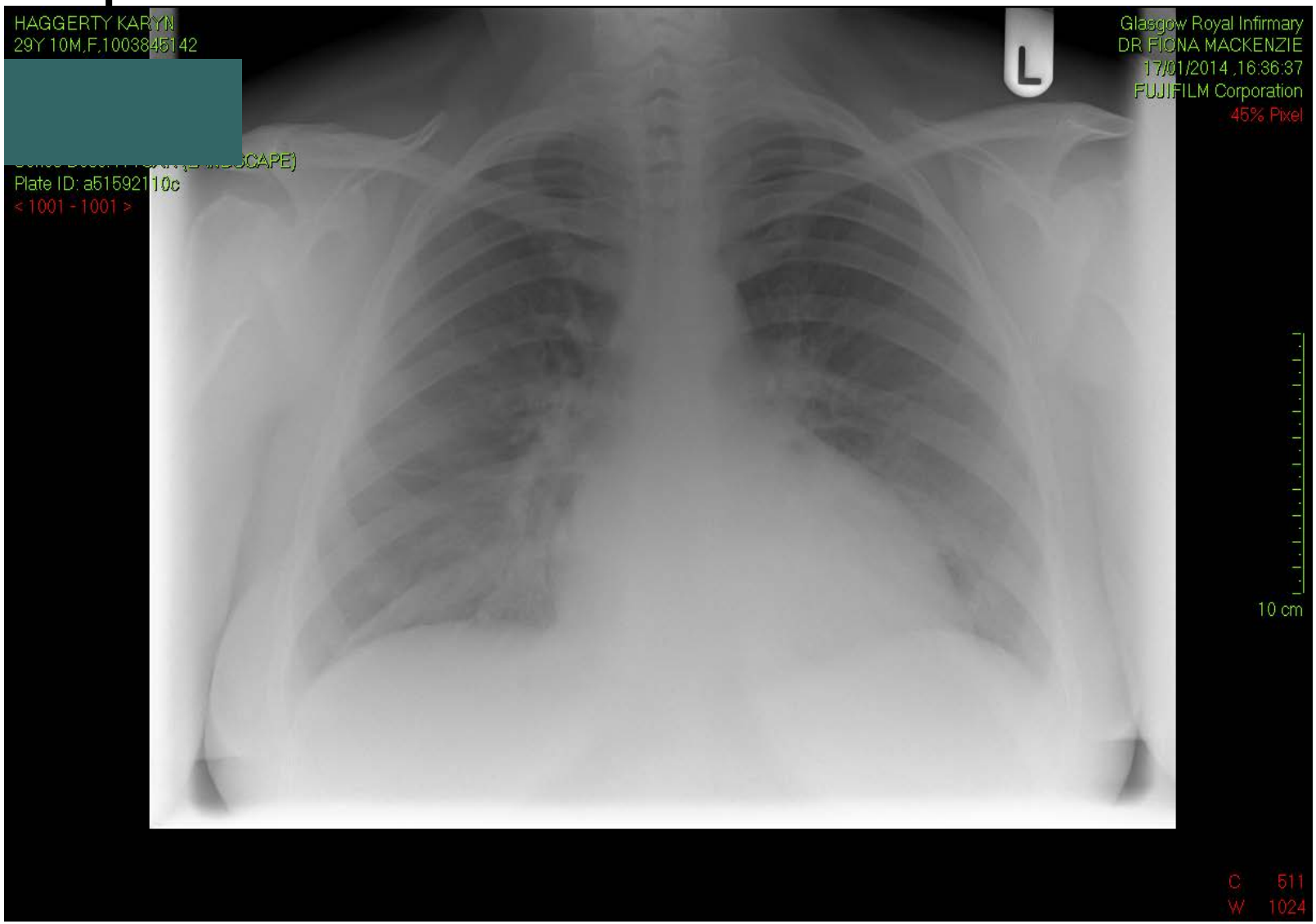
Friday afternoon – 15.30

- Awaiting CXR and blood results
- O/E – looked distressed, clammy, afebrile
  - RR 30
  - BP – 150/90
  - HR 137
  - SpO2 98% on air
  - Widespread oedema
  - CTG – Non-reassuring – reduced variability

Blood Results

- U+E's
  - Na – 133
  - K – 5.7
  - Cl – 107
  - Urea – 14.2
  - Creat - 96
- LFT's
  - Bili – 14
  - AST – 71
  - ALT – 125
  - Alk Phos - 107
  - Alb - 27
- FBC
  - WCC - 17
  - Hb – 151
  - Plts - 334
- Coag
  - PTr – 0.9
  - APPTr – 0.8
  - Fib – 3.1

Chest Xray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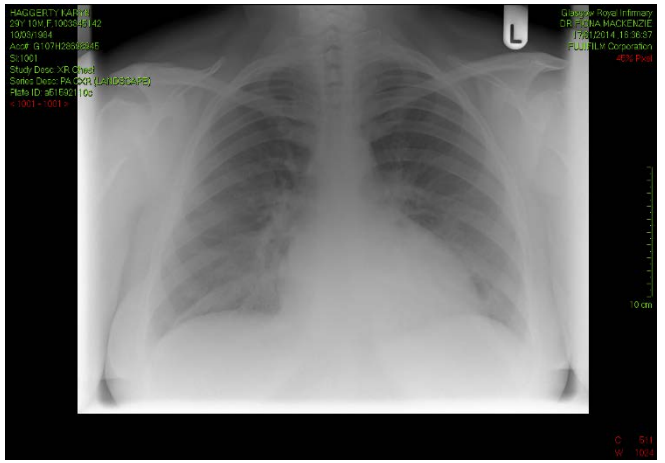
Chest x-ray report

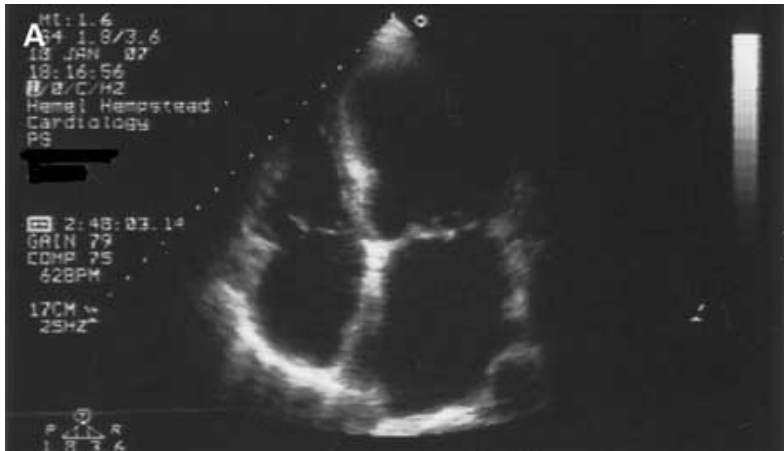
- Radiograph demonstrates mild cardiomegaly
  There is suspicion of some mild perihilar congestion. Lungs are otherwise clear. No effusions. No pneumothorax.



Echocardiogram

Bedside echo:

- Difficult to get good images due to tachycardia, BMI
- LV ejection fraction estimated at less than 30% with comment on significant LV dilatation



Cardiology Review

- Senior review rapid!
- Presumed peripartum cardiomyopathy
- Cardiology keen to transfer to cardiac centre – about 6 miles away
- Thought intra-aortic balloon pump required
- If required wanted caesarean/ delivery to be undertaken at cardiac centre – off-site

Obstetric review

- Worsening pre-eclampsia –difficult to control blood pressure
- CTG trace non- reassuring
- For Caesarean Section category 2 for fetal and maternal compromise
- **Obstetric Consultants** x2 – Argued against transfer in view of unstable blood pressure, fetal compromise
- Neonatologist
- Midwives
- Trainees
- ODPs
- Liaison with cardiac centre


MR. MEN
LITTLE MISS

18.00

- Hypertension/ tachycardia difficult to control
- Concerns about antihypertensives in view of failure - received nifedipine 10mg
- Worsening dyspnoea
- Increasing maternal distress
- Supplementary O2 required
- MDT: Plan for category 2 caesarean section

Anaesthetic review

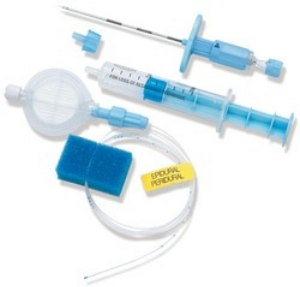
- **Anaesthetic Consultants** x3
- Very difficult venous and arterial access due to weight and oedema - prolonged
- CVP line discussed.
- Discussed regional versus general
- Decided on CSE

PROBLEMS - SUMMARY

- Very hypertensive/ tachycardic
- Low cardiac output - cardiac failure
- High BMI - all vascular access difficult
- Diabetic control poor
- Distressed on lying down
- Risks of regional anaesthesia in this scenario unknown
- Aftercare / transfer issues

Combined Spinal Epidural - rationale

- Mother keen to stay awake
- Considerable experience with technique – in comfort zone
- No cardiac anaesthetists on site
- Estimated ejection fraction likely to be inaccurate
- BETTER TO USE WHAT YOU ARE FAMILIAR WITH CAUTIOUSLY THAN EMBARK ON NEW TECHNIQUE



Set up

- 3 obstetric anaesthetists
- Arterial pressure monitored
- Vasopressors prepared – noradrenaline, dopamine
- ‘Cardiac’ anaesthetic prepared – remifentanil infusion
- Decision to use incremental CSE – low intrathecal dose,
- Early ‘bail out’ if cardiac decompensation

CSE – sitting position

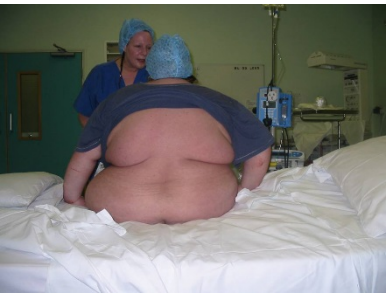
INTRATHECAL:

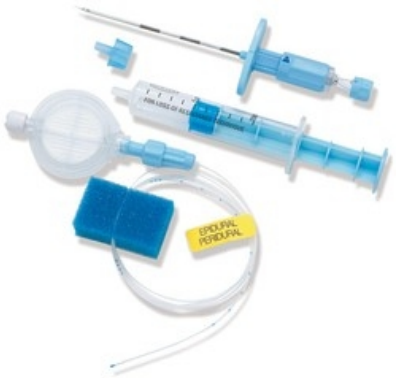
0.5 ml hyperbaric bupivacaine –waited 2 minutes – pressure steady

Repeat 0.5ml hyperbaric bupivacaine

No opioid – did not want to increase volume

EPIDURAL: 8ml 0.5% levobupivacaine slowly to bring sensory block to T4



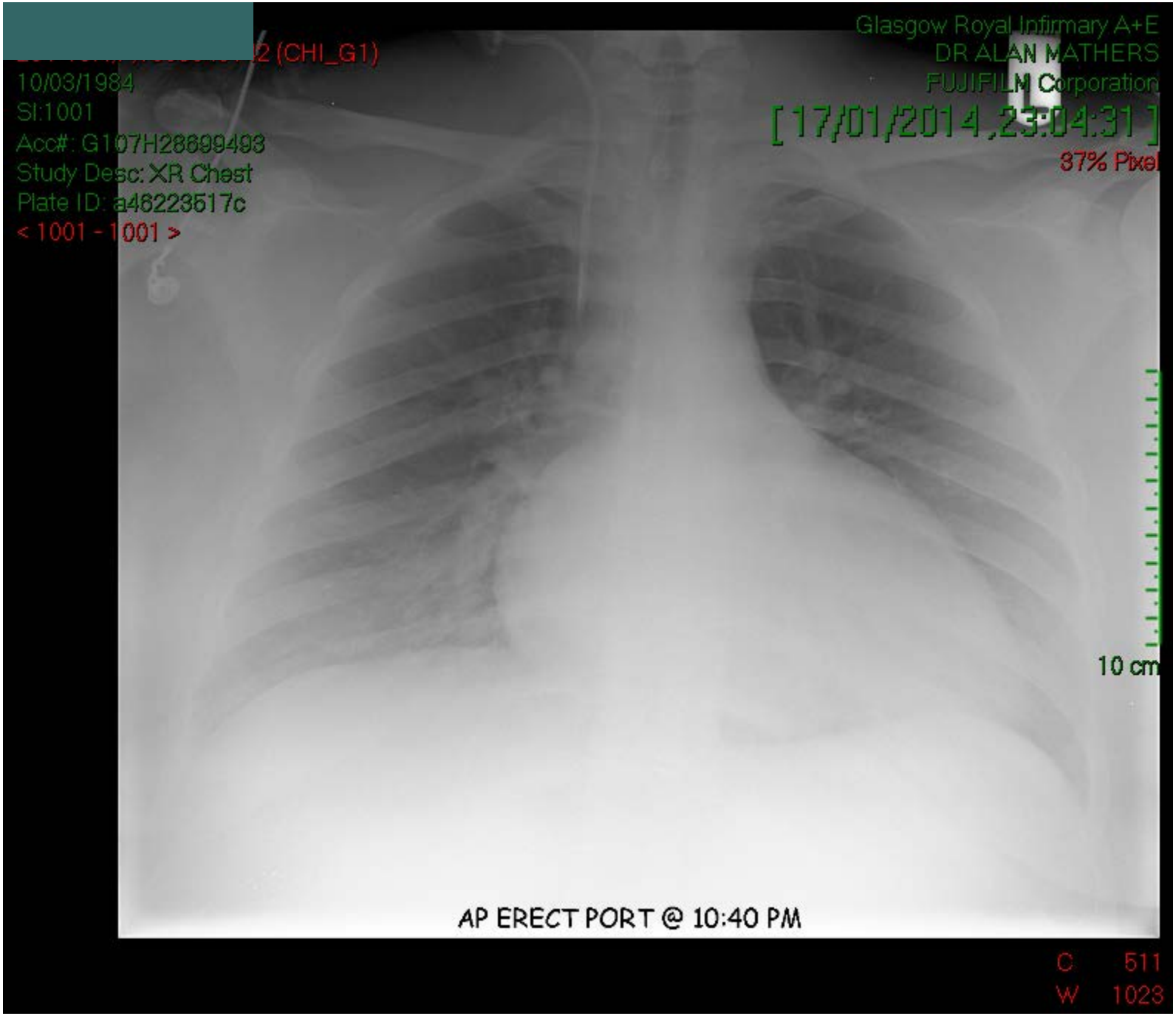


Intra-operative care

- Invasive blood pressure monitoring
- VASOPRESSOR - Phenylephrine 100ug/ml - 30mls/hr throughout, titrated down very slowly
- OXYTOCIC
  - Syntocinon – 5 units in 100mls over 30 minutes, then further infusion of 15 units in 100mls over 1 hour.
- CVP line post delivery
- Balloon Pump and cardiologist in theatre
- Blood Loss - minimal <200mls measured!!

Postoperative

- Initial stabilisation in maternity HDU
  - Monitoring blood loss, completing syntocinon infusion
- Transfer to cardiac centre
  - Intra-aortic balloon pump sited overnight, in situ for for 6 days, inpatient for three weeks, blood tests normalised within a week.
- Home with baby!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CXR Report

- The patient has a right internal jugular line, with the tip projected over the SVC and no radiological complications of insertion. No other significant change from earlier radiograph.

March 2014 – Cardiac MRI

- **Left Ventricle**
- LVEF – 26.3%
- LVEDV – 237.2ml
- LVESV – 174ml
- LVSV – 62.4ml
- LVEDVind – 115.3 ml/m^2
- LVEDD – 7cm

- **Normal Range**
- 56-78%
- 52-141ml
- 13-51ml
- 33-97ml
- 41-81 ml/m^2
- < 5.6 cm

The LV cavity is severely dilated with severe LV systolic dysfunction. RV dilated. LA dilitation

8 months post partum

- Diagnosed with probable pre-existing dilated cardiomyopathy with pregnancy associated decompensation
- LV ejection fraction - 26%
- Functional Capacity - can get up and down stairs with Moses basket, slowly
- Awaiting repeat cardiac MRI
- Awaiting review for ICD - reluctant to have this. Relatively asymptomatic

- Drug Regime
  - Warfarin, furosemide 120mg, ramipril 5mg, eplerenone 25mg, carvedilol

Challenges in Dilated Cardiomyopathy

- Pre-conceptual counselling
- Antenatal multidisciplinary discussion
  - May not be possible when these patients present acutely
  - **Dilated cardiomyopathy will be anti-coagulated – timing of delivery/ regional anaesthesia, possible 'window'**
  - avoid myocardial depression, minimise sympathetic stimulation, maintain SVR

Anaesthetic Challenges

- Operative delivery
  - Regional versus General Anaesthesia
  - Antihyptertensives
  - Vasopressors
  - **Where should the delivery occur?**

- Postpartum
  - Use of oxytocics?
  - Postoperative monitoring?
  - Optimising medical management?

Conclusion

- Undiagnosed dilatational cardiomyopathy
- Severe left ventricular dysfunction
- Elevated BMI
- Pre-eclamptic
- Diabetic
- Asthmatic
- Required category 2 caesarean section
- Off-site from cardiac unit
- Incremental CSE with invasive monitoring
- Successful outcome due in part to good multidisciplinary team , good communications, acceptance of need to compromise
- No divas!!