



Mirror Syndrome and Pre-Eclampsia, Similarities and their Co-Existence

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Objective: Mirror Syndrome, also known as Ballantyne syndrome or triple oedema, is a rare obstetric complication, suspected to be underdiagnosed. The clinical triad of mirror syndrome is the presence of foetal hydrops, placentomegaly and maternal oedema (e.g. peripheral pitting oedema, pulmonary oedema, ascites). Its maternal presentation can be very similar to pre-eclampsia, and the differentiation between the two can be complicated, particularly as both may co-exist.

Case Report

Presentation: A 37-year-old G4P3 presented at 20 weeks 5 days gestation with a 4-week history of cough, shortness of breath and peripheral oedema. She was found to be hypertensive (162/97 mmHg) at presentation.

Background:

Obstetrics History: 3 x NVD (2013, 2016, 2018) - first pregnancy complicated by pre-eclampsia

Past Medical History:

- Breast ductal carcinoma in situ (DCIS), surgically managed
- Nil cardiac or renal past medical history

Known to the Fetal-Maternal Unit for **foetal hydrops secondary to hypoplastic left heart syndrome with mitral atresia.**

- Last ultrasound at 18+1: EFW 327g (>99%), AC >99%. Persistent bradycardia (FHR 64bpm). Significant foetal ascites and placentomegaly

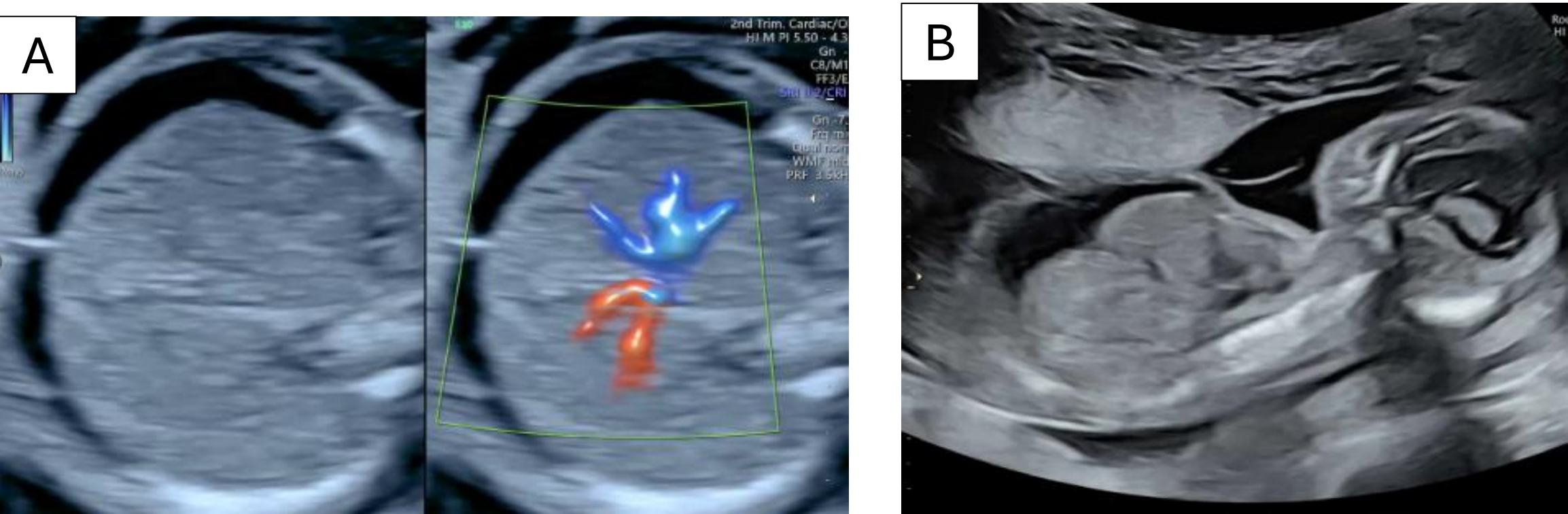


Figure 1. Ultrasound images demonstrating foetal hydrops with foetal scalp oedema (A) and foetal ascites (B)

Physical Examination:

- BP 162/97 mmHg, HR 114 bpm
- Oxygen supplementation (4L, NP) to maintain >92% SpO2
- Abdomen soft, non-tender
- Reduced air entry at bases with bibasal crepitations
- Pitting oedema to mid-shins
- Normal reflexes. 1 beat clonus bilaterally

Bloods:

- Creatinine 64 umol/L, eGFR 90
- Plt 186 x 10⁹/L
- Hb 110 g/L, PCV 0.32 L/L – L
- Normal LFTs
- Albumin 24 g/L
- Uric acid 0.27 mmol/L
- sFlt1/PlGF ratio: 231
 - 13147 pg/mL – H / 56.8 pg/mL – L
- uPCR: 1606.6 mg/mmol – H
- Pro-BNP 2123 ng/L – H
- Troponin – 20 → 19 ng/L – H

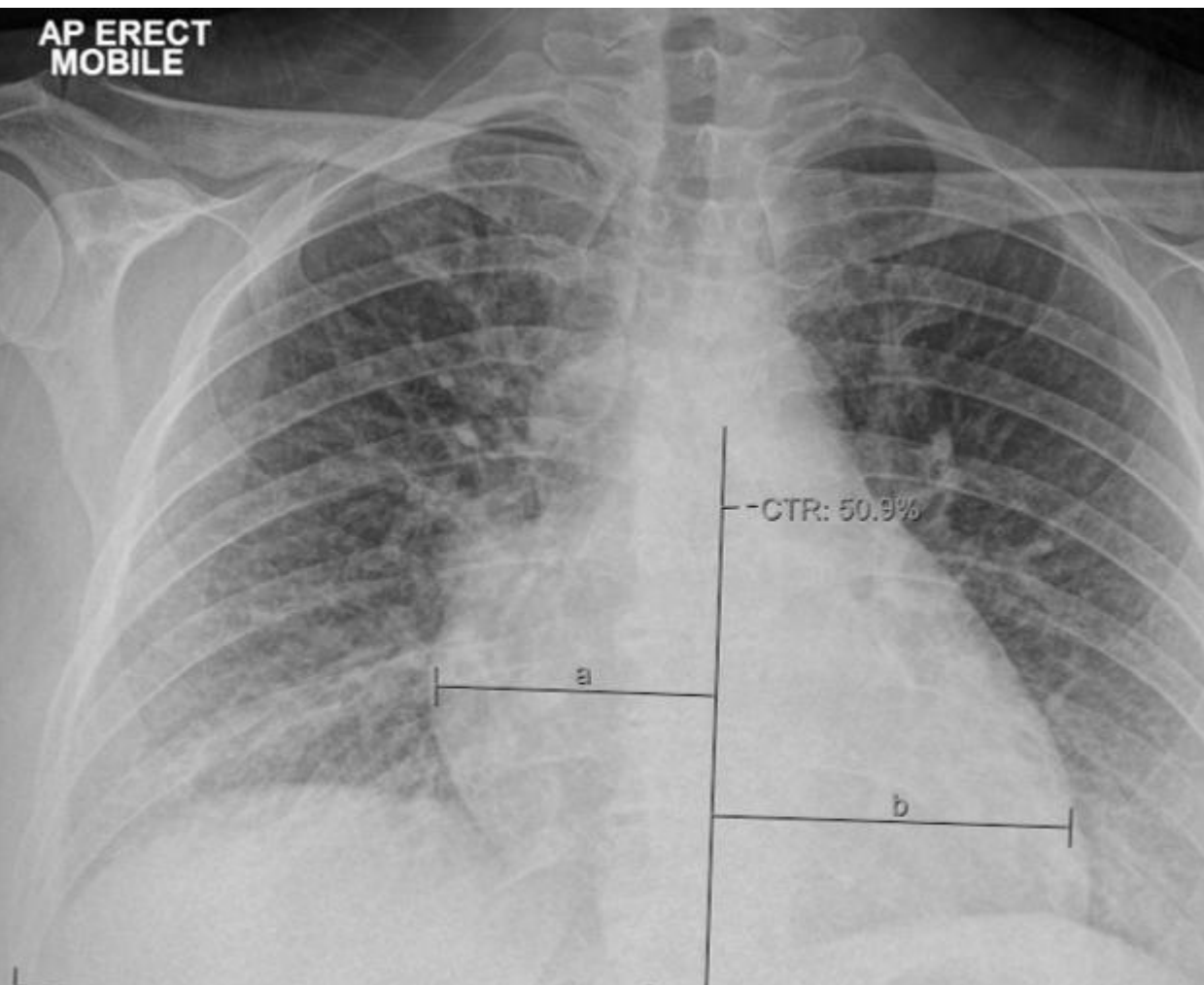


Figure 2. Chest X-ray demonstrating congestion and pulmonary oedema

Discussion

Mirror syndrome is a rare pregnancy complication, with a generally poor prognosis for the foetus (66.6% stillbirth, 25.6% neonatal death) and associated with significant maternal complications¹. Its pathogenesis is poorly understood, but it is believed to be similar to pre-eclampsia with trophoblastic damage caused by placental oedema¹; and thus, why they might present very similarly. The **possible connection between pre-eclampsia and mirror syndrome has previously been identified, but the differentiation between them can be very difficult**^{2,3}. Previous literature^{2,3, 4} has suggested parameters that might differentiate mirror syndrome and pre-eclampsia, summarised in table below:

	Pre-eclampsia	Mirror Syndromes
Onset	After 20 weeks	16-39 weeks of gestation
Hypertension	Present	Not always present or mild. Usually resolves with delivery
Proteinuria	Present	Not always present or mild
Oedema	Present, milder	Present, usually severe
Foetal hydrops	No	Yes
Placenta size	Small	Large
Haematocrit	Haemoconcentration	Haemodilution
Hyperreflexia	Present	Absent
Sflt-1/plgf	> 85	< 85

sFlt1/PlGF ratio (>38), and more recently, Pro-BNP (>116 pg/mL) have been described as parameters to indicate severity of pre-eclampsia⁵, and both were markedly elevated in this case. Given the patient presentation and investigations, this case highlights this co-existence between pre-eclampsia and mirror syndrome, and the importance of managing both pathologies appropriately with an MDT approach, particularly in the post-partum period, to improve maternal outcomes.

Conclusion

- Mirror syndrome is a rare but significant complication of foetal hydrops.
- Mirror syndrome and pre-eclampsia present very similarly and differentiating them is still poorly understood.
- An MDT approach to its diagnosis and management is key to ensure better maternal outcomes.

Management:

- Acute hypertension managed with IV hydralazine (2x doses)
- Recommendation for medical termination of pregnancy for maternal well-being**
- Proceeded to have a normal vaginal delivery of a stillborn female infant
- Multidisciplinary team (MDT) approach** for management, particularly in the intra-partum and post-partum period

Symptomatically improved post-delivery; however, required daily cardiology and renal review

- Required BD IV furosemide for 3 days
- Regular anti-hypertensives commenced and titrated:** metoprolol 50mg BD, amlodipine 10mg evening and telmisartan 80mg mane

Impression from MDT: fluid overloaded secondary to mirror syndrome / pre-eclampsia; however, also very important to rule out other pathology (e.g. cardiomyopathy given elevated pro-BNP and troponin, primary nephrotic syndrome due to elevated uPCR, pulmonary embolism due to oedema + elevated pro-BNP)

- Transthoracic echocardiogram – normal left and right ventricular size and function
- Renal tract ultrasound – no abnormality detected
- CT Pulmonary Angiogram – no evidence of pulmonary embolism

She required a 5-day admission for monitoring, medication titration and to complete all investigations as above

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