

Atypical Presentation of Group A Streptococcal Puerperal Sepsis & Toxic Shock Syndrome: A Case Report

Authors: Shahana Abdu¹ Frances Hodge² Mitra Kanagaraj³ John Chittilappilly Joy⁴
ST7 O&G¹ , Consultant O&G² ,Foundation doctor³ Princess of Wales Coity Road, Bridgend CF31 1RQ, Wales, UK. Consultant Radiologist ⁴ Royal Glamorgan Hospital, Llantrisant, CF72 8XR, Wales, UK



Introduction

- Sepsis accounts for 11% of maternal deaths worldwide.¹
- Maternal sepsis due to Group A beta-haemolytic streptococci (GAS) are particularly recognized for their high virulence, nonspecific presentation and rapid progression to invasive GAS (iGAS), life-threatening infections.²
- Pregnant women face a 20-fold greater risk of developing iGAS infections compared to non-pregnant women and this risk increases up to 80-fold within the first 28 days postpartum.²

Case summary

- A low risk young woman, para 1, presented on postpartum day 6 following a midwifery-led vaginal delivery with sudden-onset swelling of both upper and lower limbs on the same side, without typical symptoms of endometritis or genital tract infection.
- Stable on admission, except for mild fever of 37.7°C. Examination revealed mildly tender but significant swelling in both limbs with no discolouration, unremarkable pelvis- DVT was suspected but ruled out by Doppler USG.
- Laboratory tests - elevated inflammatory markers and slightly deranged electrolytes and liver function tests.
- A CT abdomen and pelvis- possible endometritis, but no evidence of retained products of conception (RPOC).
- Commenced on the Sepsis Six pathway, including IV antibiotics Cefuroxime and Metronidazole and vigorous intravenous fluid therapy.
- However, over a few hours, developed septic shock followed by a full-blown iGAS infection such as streptococcal toxic shock syndrome (STSS), necrotizing fasciitis (large skin blisters and discoloration), multiorgan dysfunction, and disseminated intravascular coagulation (DIC) in 1-2 days.
- Blood and genital cultures confirmed invasive Group A Streptococcus (GAS, type emm77). Notified infection prevention team and neonatology team.
- Antibiotics were escalated to Meropenem and Clindamycin, and required intubation, inotropic support, IV immunoglobulin therapy, albumin, and blood products.
- Multidisciplinary input including Orthopaedics, General Surgery, and Plastic Surgery.
- Removal of source infection by fasciotomy, extensive wound debridement, and uterine evacuation (although no RPOC was identified).
- Gradually improved and transferred to a tertiary centre for multiple reconstructive plastic surgeries.
- Discharged with extensive and prolonged physiotherapy and occupational therapy plans, along with support from the emotional support team after 8 weeks of hospital stay.

Table 1: Table showing blood results of the woman from Day 1 to Day 5 of sepsis

Date	WCC	Neut	Hb	Plat	CRP	Lac	Na	K	Urea	Creat	Bili	ALT	APTT	Fib
Refer	(x10 ⁹ /	(x10 ⁹ /	(g/L)	(x10 ⁹ /	(mg/	tate	(mm	(m	(mm	(μmol/	(μ	(u/L)	Seco	(g/L)
nce	L)	L)	)	L)	L)	Mn	ol/L)	mol	ol/L)	L)	mol	)	nds	)
range	4.0–	2.0–	115	150–	<5	ol/L	135–	3.5	2.5–	50–	3–	7–	25–35	1.5
	11.0	7.5	165	400			145		7.8	100	20	56		4.0
Day1	15.6	14.2	113	238	418	2.6	131	3.2	4.3	43	36	69		
						Rep								
						t								
Day2	12.1	11.3	140	137	341	5.8	128	3.6	7.1	126	34	125	36.0	4.3
Day3	34.4	31.8	104	79	375	6.4	3.3	126	4.4	16.6	245	70	172	69.7
Day4	41.7	39.1	81	43	540	8.2	123	4.7	29.1	351	59	173	43.6	4.3
Day 5	36.4	30.3	64	52	202	15.7	124	6.4	27.8	382	33	86	47.6	2.0
01:51														
am														
Day 5	30.3	24.3	56	62	132		130	6.0	23.1	272	48	69	64.5	1.3
06:30														
Day 5	24.3	20.0	92	92		6.7	136	5.4	16.1	177	72	96	35.9	1.7
15:00														

Abbreviations used in Table 1: White Cell Count (WCC), Neutrophil count (Neut), Haemoglobin (Hb), Platelets (plat), C-Reactive Protein (CRP), Sodium (Na), Potassium (K), Creatinine (Creat), Bilirubin (Bili), Alkaline Phosphatase (ALP), Alanine Transaminase (ALT), Prothrombin Time (PT), Activated Partial Thromboplastin Time (APTT), Fibrinogen (Fib).

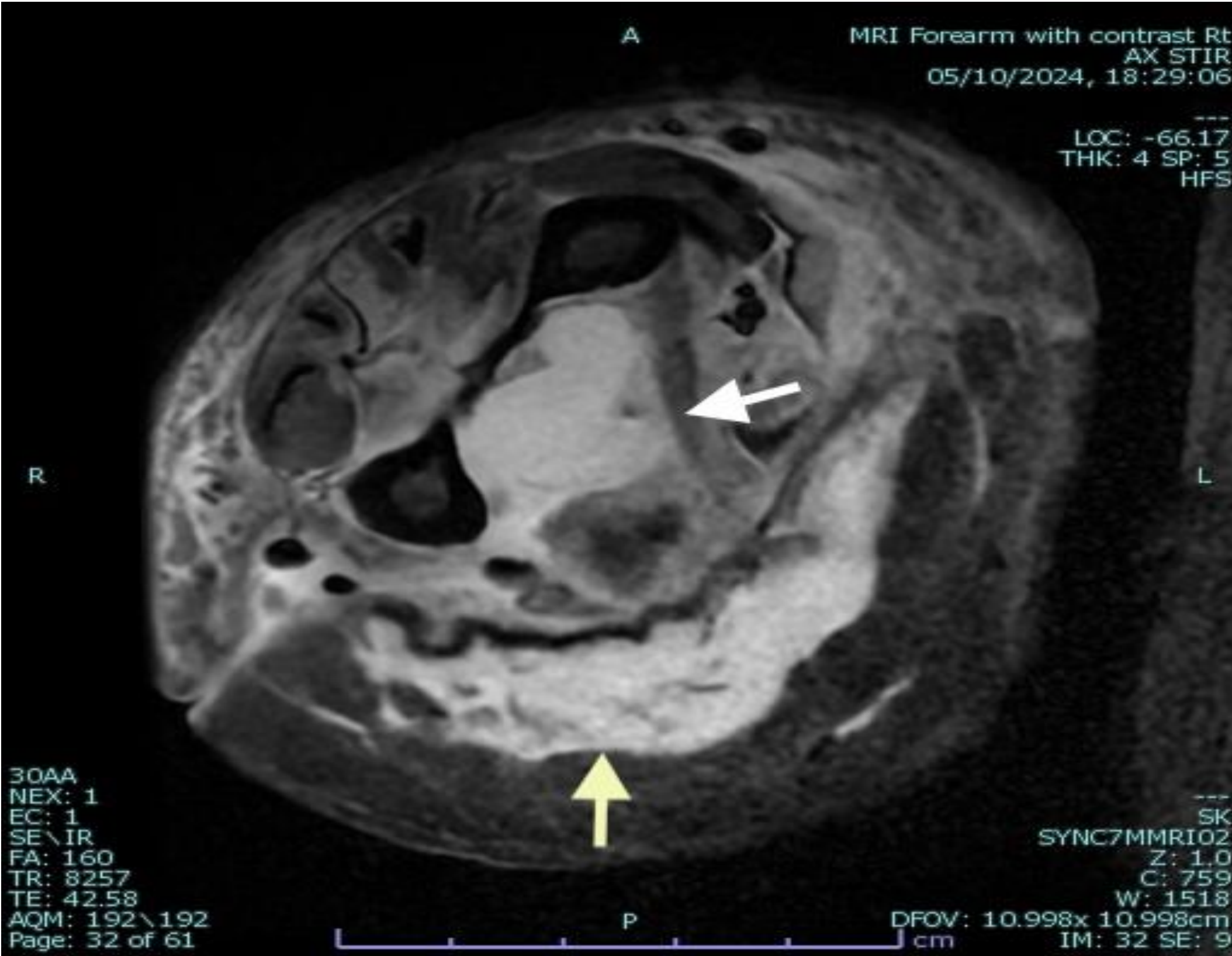


Image 1: Axial STIR sequence MRI image at the level of right mid forearm showing extensive high signal change abnormality in the flexure compartment musculature (white arrow) with surrounding subcutaneous oedema (yellow arrow).

Discussion

- GAS is a Gram-positive coccus that spreads via close contact and causes mild to deadly infections.²
- Relatively uncommon in the UK (annual incidence of 2–3 cases per 100,000 individuals), but a recent resurgence has been reported.³
- iGAS is extremely virulent, with a maternal mortality rate of over 40% if complicated by septic shock.³
- Atypical symptoms, such as limb swelling, severe limb pain, malaise, and serosanguinous or watery lochia with no offensive odour are common and delay diagnosis.²
- iGAS leads to rapid deterioration to endometritis, necrotizing fasciitis, STSS, septic shock, multiorgan failure, and death.
- Heightened vigilance, early recognition and intervention are the vital measures.²
- Early interventions - prompt initiation of the Sepsis Six bundle: fluid resuscitation, blood cultures, and administration of broad-spectrum intravenous antibiotics (as per the local guideline) within one hour, senior escalation and multidisciplinary team input.
- Intravenous immunoglobulin acts synergistically with clindamycin to neutralize exotoxins in severe or unresponsive cases.
- Identification and control of the infection source is key to limiting spread, including evacuation of RPOC, abscess drainage, wound debridement, or hysterectomy in case of uterine or adnexal necrosis.²
- In this case, although the initial differential diagnosis considered deep vein thrombosis, a high index of suspicion and prompt, aggressive intervention, including surgical source control, ultimately saved this woman’s life and prevented an amputation; even then, the morbidity from the extensive tissue loss was profound and devastating.

Conclusion

- This case highlights the critical need for clinical awareness and rapid diagnosis of iGAS infections. Enhanced training and diagnostic protocols are essential to improving patient outcomes.
- Raising awareness in pregnant women and health care workers about GAS infection and hygiene is vital.
- Future practice should prioritize rapid diagnostic tools and protocols to improve patient outcomes.

References

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Contact – shahanaabdu88@gmail.com