

The incidence and outcomes of anaphylaxis in pregnancy: a UK population-based descriptive study

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Background

- Anaphylaxis is a potentially fatal systemic hypersensitivity reaction, characterised by life-threatening airway, breathing or circulatory problems often with skin or mucosal change.
- The aetiology of anaphylaxis in the general population includes allergens such as medication, latex, insect stings or food.
- Exposure to antibiotics is increasing in the pregnant population through the use of prophylactic antibiotics before elective caesarean delivery and treatment of group B streptococcal (GBS) carriage to prevent neonatal transmission.

Background

- Specifically, antibiotic prophylaxis at caesarean section is now recommended before delivery, with the potential for adverse infant as well as maternal outcomes in the event of anaphylaxis.

Aims

- To estimate the incidence of anaphylaxis in pregnancy and describe the management and outcomes for both mothers and infants.

Methods

- National population-based descriptive study using UKOSS to identify cases between 01/10/12 and 30/09/15
- **Case definition:** Any woman with:
 - a life-threatening airway problem and/or breathing problem and/or circulatory problem
 - sudden onset and rapid progression of symptoms
 - skin and/or mucosal changes

During the study it became evident that skin or mucosal changes were not evident if the management was rapid. Therefore, all women in whom the final clinical diagnosis was anaphylaxis and who met the first two criteria were included, irrespective of the presence or absence of skin/mucosal changes.

Results - Incidence

- 37 women met the case definition among an estimated 2,324,552 maternities
 - Overall incidence 1.6 per 100,000 maternities (95% CI 1.1-2.2)
 - 3.9 per 100,000 caesarean deliveries (95% CI 2.5-5.9)
 - 0.66 per 100,000 vaginal deliveries (95% CI 0.33-1.2)

Characteristics of women

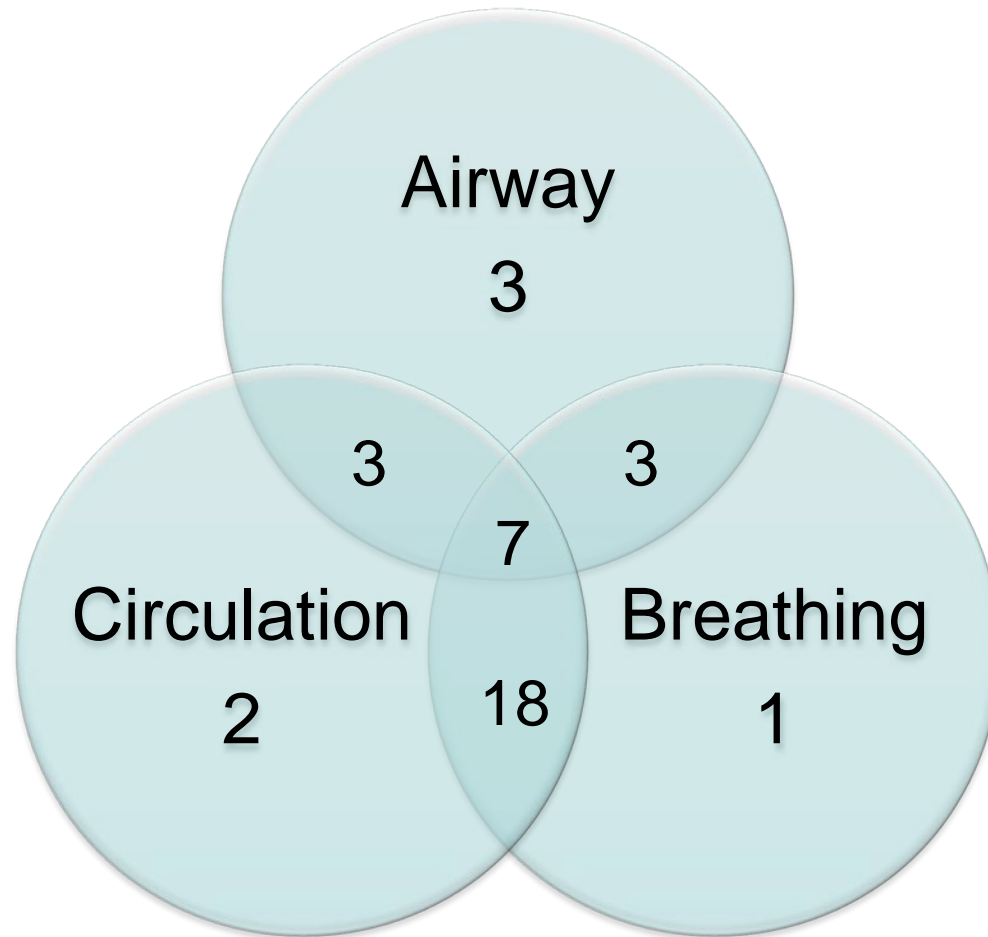
	Number of women (%)
History of atopy	16 (43)
History of allergic reactions	29 (78)
Known drug allergy	12 (32)
Penicillin allergy*	10 (83)
Previous anaphylactic reaction	2 (5)

*4 women with a known penicillin allergy had an anaphylactic reaction to penicillin/cephalosporin; 2 received co-amoxiclav, 2 cefuroxime

Presentation

	No. of women (%)
Symptoms	
Breathing problems	29 (78)
Airway	16 (43)
Circulatory problems	30 (81)
Skin or mucosal changes	24 (65)
Location	
Delivery suite room	10 (28)
Obstetric Theatre	19 (53)
Postnatal ward	2 (6)
Other (inc. home)	5 (14)

Presentation

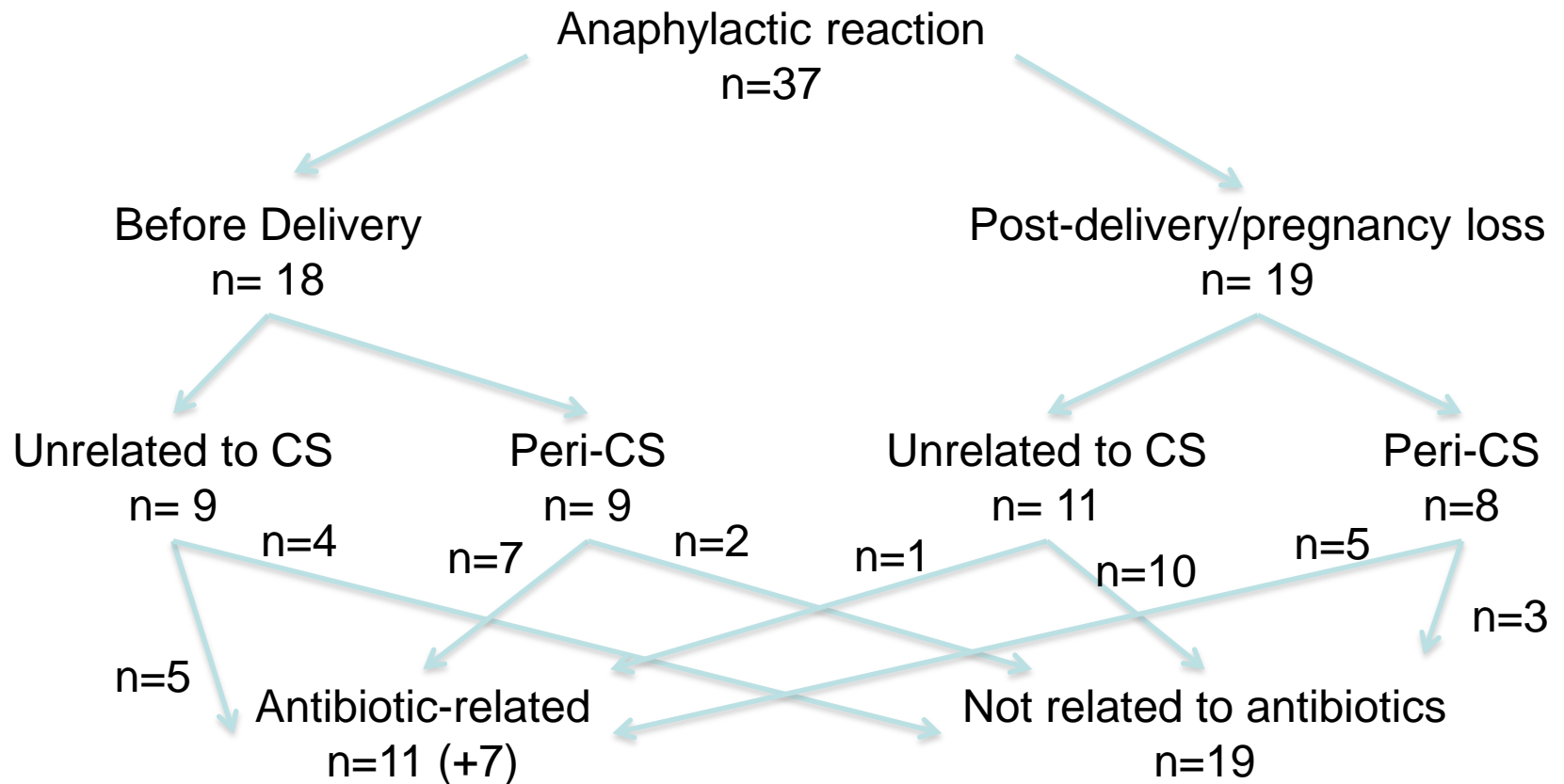


Presumed causal agents

	No. of women (%)
Single suspected agent	25 (67)
Antibiotics	11 (30)
Cephalosporin	1 (3)
Imidazole	1 (3)
Penicillin-based	9 (28)
Oxytocics	1 (3)
Blood products	3 (8)
Intravenous iron	2 (5)
Gelofusine	2 (5)
Anaesthetic agents	2 (5)
Other	4 (11)
Agent unknown	1 (3)
Multiple suspected agents	11* (30)

*7 cases included antibiotics amongst the suspected agents

Timing



Brackets indicate antibiotics are one of multiple possible causes

Management

Management	Number of women (%)
High flow O₂	29 (78)
IV fluids	32 (86)
Adrenaline	28 (76)
Chlorpheniramine	28 (76)
Hydrocortisone	33 (89)
Tryptase levels tested	31 (84)
Abnormal tryptase level	9* (29)

*Data on result of tryptase measurement missing for 11 women

Maternal outcomes

	Number of women (%)
ITU admission	14 (38)
Other severe morbidity	7 (19)
Maternal death	2 (5)

Maternal mortality rate 0.8 per million maternities
(95% CI 0.1-3.1)

Infant outcomes

	Anaphylaxis before delivery n=17 (%)	Anaphylaxis after delivery n=17 (%)
Preterm birth (<37 weeks)	3 (18)	1 (6)
5 min Apgar (median, IQR)	9 (7.5-9)	9 (9-9)
Neonatal ICU admission	7 (41)	3 (18)
Neonatal encephalopathy	1 (6)	0 (0)
Perinatal death	0 (0)	0 (0)

Conclusions

- Anaphylaxis is an extremely rare severe complication of pregnancy that may result from administration of antibiotics and other drugs.
- Reactions to anaesthetic agents are an infrequent cause.
- Reactions to antibiotics appear no more frequent than in the general population.
- Anaphylaxis may have severe outcomes for both mother and fetus but these were uncommon.

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