COLLAPSE IN THE PARTURIENT (AFE)

MODULE: OBSTETRIC

TARGET: ANAESTHETIC CORE TRAINEES & ALL ANAESTHETISTS & OBSTETRIC TEAMS

BACKGROUND:

A collapsed parturient is an anaesthetic and obstetric crisis, with specific provision made in the Resus Council's ALS protocols for managing the pregnant patient in cardiorespiratory arrest. Amniotic fluid embolism (AFE) is an important cause of cardiovascular collapse with multisystem effects. In the most recent CMACE report Saving Mother's Lives (2006-2008), amniotic fluid embolism was the fourth most common cause of maternal mortality.

Anaesthetists responsible for delivery suite should be aware of the management of suspected AFE.

RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

IG_BS_10	In respect of airway management: • Demonstrates optimal patient position for airway management • Manages airway with mask and oral airways • Demonstrates hand ventilation with bag and mask • Demonstrates correct head positioning, direct laryngoscopy and successful oral intubation techniques and confirms correct tracheal tube placement • Demonstrates proper use of bougies • Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer • Correctly conducts RSI sequence
IO_BS_07	Demonstrates role as team player and when appropriate leader in the intra-operative environment
IO_BS_08	Communicates with the theatre team in a clear unambiguous style
IO_BS_09	Able to respond in a timely and appropriate manner to events that may affect the safety of patients [e.g. hypotension, massive haemorrhage] [S]
ES_BS_01	Manages preoperative assessment and resuscitation/optimisation of acutely ill patients correctly
ES_BS_03	Manages rapid sequence induction in the high risk situation of emergency surgery for the acutely ill patient
RC_BS_01	Uses an ABCDE approach to diagnose and commence the management of respiratory and cardiac arrest in adults and children
RC_BS_02	Demonstrates correct interpretation of the signs of respiratory + cardiac arrest
RC_BS_06	Performs external cardiac compression
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CI_BK_01	Cardiac and/or respiratory arrest
CI_BK_21	Gas / Fat/ Pulmonary embolus
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making + maintenance of high situation awareness]
CI_BS_02	Demonstrates the ability to recognise early a deteriorating situation by careful monitoring
CI_BS_05	Demonstrates ability to recognise when a crisis is occurring
CI_BS_06	Demonstrates how to obtain the attention of others and obtain appropriate help when a crisis is occurring
1.2	Manages cardiopulmonary resuscitation
1.3	Manages the patient post resuscitation
3.11	Recognises life-threatening maternal peripartum complications and manages care under supervision
OB_BS_01	Undertakes satisfactory preoperative assessment of the pregnant patient
OB_BS_03	Demonstrates the use of techniques to avoid aorto-caval compression
OB_BS_07	Demonstrates the ability to provide general anaesthesia for caesarean section [S]
OB_BS_11	Demonstrates ability to recognise when an obstetric patient is sick and the need for urgent assistance
OB_BS_12	Demonstrates the ability to provide advanced life support for a pregnant patient [S]
OB_IK_05	Recalls/describes the recognition and management of amniotic fluid embolus
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals
OB_IS_09	Demonstrates the ability to provide intra uterine resuscitation for the “at risk” baby
OB_HS_03	Demonstrates the ability to be an effective part of a multidisciplinary team
OB_HS_06	Demonstrates skill in managing emergencies including pre-eclampsia, eclampsia, major haemorrhage

INFORMATION FOR FACULTY

LEARNING OBJECTIVES:

- Cardiopulmonary resuscitation in the pregnant patient.
- Management of suspected amniotic fluid embolism.

SCENE INFORMATION:

- Location: Delivery Suite

This scenario is set in a room on delivery suite. The scenario is also suitable for team based training.

A labouring woman has suddenly started to feel unwell and become unresponsive. The midwife in the room has sounded the emergency alarm bell, and started cardiac massage.

The anaesthetist is first to arrive in response.

EQUIPMENT & CONSUMABLES

- Pregnant simulation model and neonatal model
- Wedge
- CTG Monitor
- Simulated blood products for transfusion: Packed red cells, FFP, cryoprecipitate, platelets
- Evidence of haemorrhage: blood-stained inco pads, kidney bowls with blood, suction container containing blood
- Stocked cardiac arrest trolley

PERSONS REQUIRED

- Anaesthetic Junior Trainee
- Anaesthetic Senior Trainee
- Obstetrician
- Midwife
- Anaesthetic Assistant (Optional)
- Scrubs nurse (Optional)
- Theatre Assistant – runner (Optional)
- Paediatrician (Optional)

PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

You are the anaesthetist covering labour ward.

The emergency cord has just been pulled in one of the labour rooms, there is a commotion and staff are calling for the anaesthetist.

FACULTY BRIEFING:

'VOICE OF MANIKIN' BRIEFING:

Patient remains unresponsive throughout.

'IN SCENARIO PERSONNEL' BRIEFING:

MIDWIFE

You have been looking after this lady during her labour when she suddenly collapsed and became unresponsive. You were unable to feel a pulse, and so pulled the alarm bell and started chest compressions.

You are able to give the anaesthetist the following information, but she had only just arrived on labour ward and so you don't have much information about her. Around 15mins prior to her collapse you had cannulated her and sent off bloods:

A 36 year old primip has been admitted in spontaneous early labour. She felt breathless and complained of chest pain before a sudden collapse and unresponsiveness.

No past medical history of note. No regular medicines (except Pregnacare). No allergies.

OBSTETRICIAN

Suggest performing a perimortem Caesarean section during the arrest – before commencing the procedure though there is a return of spontaneous circulation.

Push to move the patient to theatre to perform a Caesarean section once circulation has been re-established.

'VOICE OF TELEPHONE HELP' BRIEFING:

Consultant anaesthetist is available to give telephone advice regarding the ongoing resuscitation and coagulopathy if called. They are 15 mins away.

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ADDITIONAL INFORMATION: 1st ABG & INITIAL BLOODS

RADIOMETER ABL 9000 SERIES

ABL900 ED			00:00:00	08-1-2013
PATIENT REPORT	Syringe	S195uL	Sample#	90.....

Patient ID	
Patient First Name	Elizabeth
Patient Last Name	Forrest
Date of Birth	28 yrs old
Sample type	Arterial
Fi O_2	1.0
Department	ED
Operator	

Blood Gas Values

pH	7.12		[7.340 - 7.450]
pCO2	7.4	kPa	[4.70 - 6.00]
pO2	12	kPa	[10.0 - 13.3]
pO2(A-a)e		kPa	

Oximetry Values

ctHb	9.3	g/dL	[12.0 - 16.0]
sO_2	99	%	[95.0 - 98.0]
FO_2Hb		%	[94.0 - 99.0]
FCOHb			[-]
FHHb		%	[-]
FmetHb		%	[0.02 - 0.06]
Hctc	0.24	%	

Electrolyte Values

cK+	4.8	mmol/L	[3.0 - 5.0]
cNa+	137	mmol/L	[136 - 146]
cCa^{2+}	1.10	mmeq/L	[1.15 - 1.29]
cCl-	99	mmol/L	[98 - 106]

Metabolite Values

cGlu	6.9	mmol/L	[3.5 - 10.0]
cLac	4.1	mmol/L	[0.5 - 1.6]

Acid Base Status

cBase(Ecf)c	-14.5	mmol/L
$cHCO^3$-(P,st)c	10	mmol/L

CONDUCT OF SCENARIO

EXPECTED ACTIONS

- Confirm cardiac arrest (PEA)
- Call for help (2222)
- Commence ALS with other team members with wedge
- On 2nd pulse check – ROSC
- Fluid resuscitation

INITIAL SETTINGS

A: Own.
B: RR 1/min. SaO2 85% unless O2 applied.
C: No palpable pulse. BP 30/10.
D: Eyes closed. GCS 3.
E: Midwife is performing CPR

EXPECTED ACTIONS

- Consider DDx
- Expedite delivery – transfer to theatre or in-room C-Section
- Appropriate anaesthesia
- Send bloods urgently

ROSC

A: Own – or intubated by participant
B: **RR 10** or ventilated by participant
C: **HR 120 BP 70/30. Weak pulses.**
D: GCS 3.
E: Foetal bradycardia – if monitored

POST-ROSC SETTINGS

A: Intubated
B: Ventilated. SaO2 92% on FiO2 100% - Pulmonary oedema
C: BP 80/40 – requiring pressors. HR 110
D: GCS 3 – anaesthetised.
E: Evidence of coagulopathy – difficult to achieve haemostasis.

ADDITIONAL INFO

- **1st ABG: See previous page**
- **Initial and (Repeat) Bloods:**
  Hb 9.2 (7.8)
  WCC 16 (19)
  Plts 90 (39)
  INR 1.3 (3.2)
  APTR 1.2 (4.2)
  Fib N/A (0.5)
  Na 138
  K 5.8
  Ur 5
  Cr 80
- **2nd ABG: on 100% O2**
  pH 7.24
  pCo2 5.0
  pO2 22
  BE-6.6
  Lact 4.1

EXPECTED ACTIONS

- Maintain Anaesthesia
- Invasive Monitoring
- Liaison with blood bank for treatment of DIC
- Planning for transfer to ICU

LOW DIFFICULTY

- Hypotension responsive to pressor
- DIC not prominent feature

NORMAL DIFFICULTY

- Difficult to maintain SpO2
- Hypotension poorly responsive to pressors
- DIC

HIGH DIFFICULTY

- Hypoxia and hypotentsion poorly responsive to treatment
- Severe DIC – coagulopathy causing severe Haemorrhage.

RESOLUTION

Scenario ends at faculty discretion: Safe delivery of newborn or once appropriate anaesthetic management has been demonstrated.

DEBRIEFING

POINTS FOR FURTHER DISCUSSION:

Technical:

- Management of cardiac arrest in the pregnant patient
- Causes of arrest in the pregnant patient
- Amniotic fluid embolism: Recognition and management

Non-technical:

- Based on established non-technical skills frameworks e.g. ANTS, NOTECHS etc
- Appropriate communication with patient during unexpected adverse events.

DEBRIEFING RESOURCES

1. Amniotic Fluid Embolism. Tan A, McDonnell N. Anaesthesia Tutorial of the Week 197: Sept 2010

   http://totw.anaesthesiologists.org/wp-content/uploads/2010/10/197-Amniotic-fluid-embolism.pdf

2. Amniotic Fluid Embolism. Dedhia DA, Mushambi MC. Contin Educ Anaesth Crit Care Pain (2007) 7 (5):152-156

   http://ceaccp.oxfordjournals.org/content/7/5/152.full.pdf+html?sid=11799c91-c128-45be-92de-2a9cad10c6bd

INFORMATION FOR PARTICIPANTS

KEY POINTS:

- Cardiopulmonary resuscitation in the pregnant patient.
- Management of suspected amniotic fluid embolism.
- Multidisciplinary approach to managing this crisis – including appropriate handovers.

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PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?

PARTICIPANT FEEDBACK

Date of training session:.....

Profession and grade:.....

What role(s) did you play in the scenario? (Please tick)

Primary/Initial Participant	
Secondary Participant (e.g. 'Call for Help' responder)	
Other health care professional (e.g. nurse/ODP)	
Other role (please specify):	
Observer	

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I found this scenario useful					
I understand more about the scenario subject					
I have more confidence to deal with this scenario					
The material covered was relevant to me					

Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?
(This is especially important if you have ticked anything in the disagree/strongly disagree box)

FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM

What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn't it go well?

How could the scenario be improved for future participants?