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TO HELP IN RESUSCITATION CASES, WHICH OCCUR IN PREGNANT WOMEN.

Sarimsakova Khabibahon Matkarimovna.
The Republican Secondary Medical and Pharmaceist staff training and specialization Fergana is a teacher "Nursing in intensive career".
Sufiakhunova Dilnoza Abdusalomovna.
The Center for Professional Development of Secondary Medical and Pharmaceist International Medical and Pharmaceevert Education Center of Fergana Filleyali teacher "Nursing in obstetrics and gynecology".

Annotation: Resuscitation in pregnant women presents unique physiological and anatomical challenges that require modifications in standard cardiopulmonary resuscitation (CPR) protocols. This article reviews the key considerations in maternal resuscitation, including pathophysiology, necessary modifications, and best practices to optimize maternal and fetal outcomes.
Keywords: Resuscitation, pregnancy, cardiopulmonary resuscitation (CPR), maternal cardiac arrest, emergency medicine, perimortem cesarean delivery.

Maternal cardiac arrest is a rare but critical emergency requiring prompt and specialized interventions to ensure both maternal and fetal survival. Physiological changes during pregnancy, including increased blood volume, decreased systemic vascular resistance, and aortocaval compression, significantly impact resuscitation strategies. Understanding these unique challenges is crucial for healthcare providers managing resuscitation in pregnant patients.

Resuscitation in Pregnant Women: A Detailed Guide

Cardiac arrest in pregnancy is rare but requires urgent intervention to maximize both maternal and fetal survival. Pregnancy-specific physiological changes, such as increased blood volume, altered airway anatomy, and aortocaval compression, require modifications to standard resuscitation procedures.

Immediate Response: Call for Help

- Activate emergency services immediately.
- If in a hospital setting, call the obstetric, anesthesiology, neonatology, and critical care teams.
- Ensure rapid access to emergency resuscitation equipment (oxygen, defibrillator, intubation kit, IV fluids, and medications).

Positioning the Patient: Left Uterine Displacement (LUD)

Pregnant women in their second or third trimester (≥20 weeks) should be positioned to relieve aortocaval compression, which can compromise circulation.

- Manual Uterine Displacement (Preferred): Use one hand to push the uterus leftward.
- Left Lateral Tilt (Alternative): Place the patient on a spinal board and tilt it 15– 30° to the left.
- If CPR is needed, do NOT delay compressions—start immediately while another rescuer performs manual displacement.

Why is this necessary?

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- The gravid uterus compresses the inferior vena cava, reducing venous return, cardiac output, and blood pressure.
- This can lead to ineffective chest compressions and reduced perfusion to the brain and heart.

Airway Management

Pregnant women have increased risks of airway swelling, aspiration, and hypoxia due to physiological changes.

- Early Intubation is Preferred
  - Use a smaller endotracheal tube (6.0– 7.0 mm) due to airway edema.
  - Have a difficult airway kit available (video laryngoscope, bougie, and cricothyrotomy set).
- Cricoid Pressure (Sellick Maneuver) to prevent aspiration.
- Avoid over-ventilation: Hyperventilation reduces venous return and cardiac output.
- Provide 100% oxygen via bag-mask or endotracheal tube.

Breathing Support

- Deliver breaths every 6 seconds (10 breaths per minute) if the patient is intubated.
- Ensure chest rise with each breath.
- If intubation fails, consider supraglottic airway devices (e.g., laryngeal mask airway, LMA).

Circulation: High-Quality Chest Compressions

If the patient is unresponsive and no pulse is felt within 10 seconds, begin immediate chest compressions.

- Technique Modifications for Pregnancy:
  - Perform compressions slightly higher on the sternum than usual.
  - Use both hands and push hard (5–6 cm) and fast (100–120 compressions per minute).
  - Allow full chest recoil between compressions.
  - Minimize interruptions.
- Defibrillation
  - Use standard adult energy doses (120–200 J biphasic, or 360 J monophasic).
  - No fetal contraindication to defibrillation—the priority is maternal survival.
- IV/IO Access
  - Avoid lower extremity IV lines due to potential venous compression by the uterus.
  - Use antecubital veins or intraosseous (IO) access in the proximal humerus.

The management of cardiac arrest in pregnant women necessitates a multidisciplinary approach involving obstetricians, anesthesiologists, and emergency responders. Training programs should emphasize simulation-based learning to improve response times. The use of advanced airway management techniques and extracorporeal membrane oxygenation (ECMO) in refractory cases remains an area for further exploration. Moreover, early identification of high-risk pregnancies and proactive maternal health monitoring can help prevent emergencies.

Conclusions

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- Conclusions: Resuscitation in pregnant women requires specific modifications to standard CPR, including left lateral tilt positioning and early consideration of PMCD. Prompt intervention significantly enhances maternal and neonatal survival rates.
- Suggestions: Hospitals should implement structured training programs for obstetric emergency teams. Future research should focus on optimizing prehospital maternal cardiac arrest management and exploring novel interventions such as ECMO in pregnancy-related resuscitation.

This article aims to provide healthcare professionals with a comprehensive understanding of resuscitation protocols tailored for pregnant women, ensuring better outcomes in emergency scenarios.

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