ASPHYXIA NEONATORUM AND NEONATAL CONVULSIONS

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OBJECTIVES

1. Define Asphyxia neonatorum /birth asphyxia
2. Review etiology
3. Review the APGAR Score and interpretation
4. Review the clinical presentation and differential diagnosis
5. Evaluation and treatment of a neonate with asphyxia neonatorum
6. Review complications

DEFINITION

- Asphyxia neonatorum means failure to **initiate and maintain spontaneous respiration within one minute of birth** which then results in absence of the pulse.

AETIOLOGY

There are two main types of neonatal asphyxia:

- Acute asphyxia which was caused by intranatal factors only.
- Asphyxia, which was developed due to prolonged fetal hypoxia associated with placental insufficiency.

The high risk factors of fetal (antenatal) hypoxia development:

- Maternal age of less than 16 years old or over 40 years old.
- Postmaturity.
- Multiple pregnancy.
- Threatened preterm labor.
- Diabetes mellitus in pregnant women.
- Bleedings and infectious diseases in II-III trimester of pregnancy.

CONT..

- Smoking or drug addiction in pregnant women.
- Intrauterine growth restriction or another diseases revealed in fetus in ultrasound examination.

The high risk factors of acute (intranatal) asphyxia development:

1. Cesarean operation (planned or urgent).
2. Malpresentation (breech, transverse/oblique presentation).
3. Premature or SGA.
4. Placental abruption.
5. Obstetrical forceps or vacuum-extractor use.

. Birth trauma.

8. Congenital malformations of fetus.
9. Acute labor hypoxia in mother (shock, amniotic fluid embolism, poisonings, decompensated diseases).
10. Maternal anesthesia (both the intravenous drugs and the anesthetic gases cross the placenta and may sedate the fetus).

At birth, symptoms may include:

Physiological newborns reflexes are depressed

- Meconium in the amniotic fluid
- Arterial hypotension
- rales over the lungs
- Hepatomegaly
- Fluid, electrolyte and metabolic abnormalities including hyperkalaemia, hypoglycaemia, and acidosis.

Cont ...

Apgar Scale (evaluate @ 1 and 5 minutes postpartum)				
Sign		2	1	0
A	Activity (muscle tone)	Active	Arms and legs flexed	Absent
P	Pulse	>100 bpm	<100 bpm	Absent
G	Grimace (reflex irritability)	Sneezes, coughs, pulls away	Grimaces	No response
A	Appearance (skin color)	Normal over entire body	Normal except extremities	Cyanotic or pale all over
R	Respirations	Good, crying	Slow, irregular	Absent

Interpretation of the APGAR SCORE

- A score of 7-10 is normal (no depression)
- 4-6 indicates moderate CNS depression
- 0-3 indicates severe CNS depression.

Evaluation

MANAGEMENT

- Prophylactic
- Supportive
- Definitive

PROPHYLACTIC

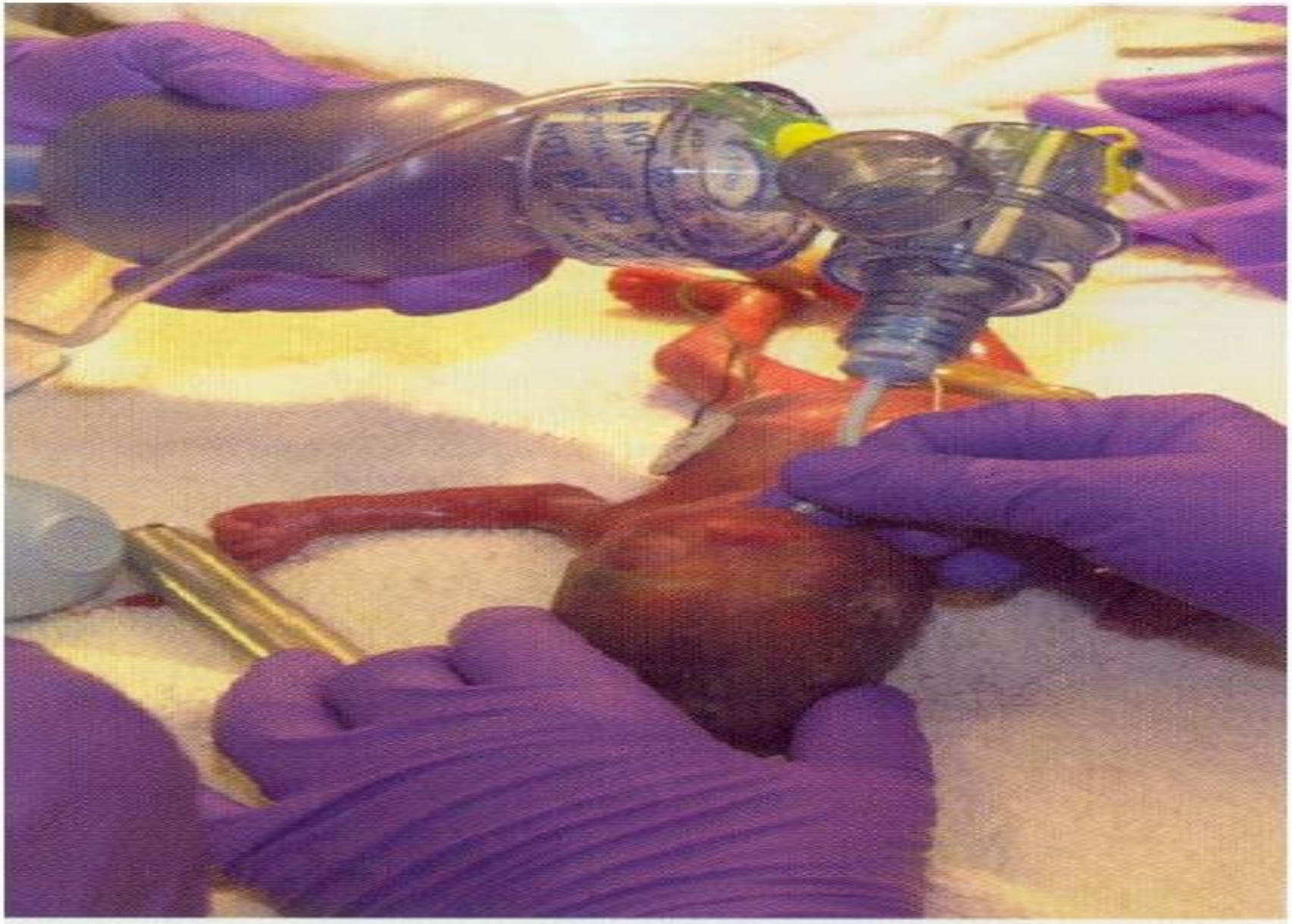
1. Antenatal detection of high risk patients
2. Careful fetal monitoring, particularly in high risk pregnancy
3. Judicious administration of anaesthetic agents and depressant drugs during labor.

BABIES WITH APGAR SCORE 7-9 (PINK, BREATHING REGULAR HR > 100).

- O_2 administration if cyanosed on peripheries
- Re-assess the condition at 5minutes

BABIES WITH APGAR SCORE 4-6 [PERIPHERAL CYANOSIS, BREATHING IRREGULAR HR≥100…..Contd

- Place under a radiant heater and dry the baby
- Baby is put flat or airway in neutral position
- Immediate suction
- O_2 administration



BABIES WITH APGAR SCORE BELOW 4 (CENTRAL CYANOSIS)

No breathing HR <100]

- Tracheal intubation and ventilatory support must be started immediately
- If mother received pethedine or morphine within 3hrs of delivery give Nalaxone 10μg /kg i/v it may be repeated every 2-3mts.

Supportive

- IV Fluids: 10% dextrose 2/3 of the volume for the day
- Convulsions chart
- Input/output chart
- Trophic feeds
- Oxygen if in distress
- Counsel the parents

Complications

- Immediate
- Delayed

IMMEDIATE

- Cardiovascular – HTN, cardiac failure
- Renal – acute cortical necrosis, renal failure
- Liver function – compromised
- GI – Ulcers and necrotising enterocolitis
- Lungs – Persistent pulmonary HTN
- Brain – Cerebral edema, seizures.

DELAYED

- Retarded mental and physical growth
- Epilepsy – up to 30% in severe asphyxia
- Minimal brain dysfunction

- Questions ?????