Sudden unexpected postnatal collapse:

Update of a Dutch surveillance study.

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Background

Sudden and unexpected collapse (SUPC) of apparently healthy newborn infants is a life-threatening event. SUPC may result from diseases (50%), i.e., congenital anomalies, pulmonary hypertension, infections, intracranial hemorrhages, metabolic and endocrine disorders. SUPC may also be caused by postural asphyxia: accidental suffocation due to an obstructed airway (Figure). Postural asphyxia is associated with prone position on mother's chest, breast-feeding, and poor recognition of airway compromise. Scant data exists on occurrence, causes and associated risk factors of SUPC in the Netherlands.

Figure. Infant at risk for SUPC. Unsafe safe skin-to-skin contact with obstructed airway of the newborn infant.
Photograph by the father. Courtesy of professor T.M. Berger, Swiss Society of Neonatology.

Aim: To determine the incidence of SUPC and associated factors in the Netherlands.

Methods

The Dutch Surveillance Center of Pediatrics (NSCK) registry on SUPC is set up in April 2019 and will run until April 2022. Pediatricians nationwide are asked to voluntarily report on cases of SUPC via a web-based questionnaire. The case definition of SUPC is: a newborn born at ≥ 35 weeks' gestation with an Apgar score ≥ 8 after 5' who presents with cardiorespiratory collapse necessitating resuscitation within 24 h of birth. Resuscitation also includes mild respiratory support, e.g., insufflation breaths before CPAP.
SUPC is caused by airway obstruction when nose and mouth of the infant are covered at the time of the collapse. When this is not sure, but the pediatrician documents that the SUPC is caused by airway obstruction, SUPC is classified as caused by possible airway obstruction.

Results

- In total, 36 SUPC cases have been registered in 24 months; 15 and 21 in the first and second year of the registry, respectively .
- The estimated population incidence varies from 0.09 /1000 (1/11.000) to 0.13/1000 (1/8000) live born newborn infants ≥ 35 weeks' gestation.

Table. Characteristics of SUPC cases

	SUPC (n=36)
Place	
- Hospital	30
- Home	6
Type of delivery	
- Normal vaginal delivery	26
- Instrumental vaginal delivery	4
- C-Section	6
Time, minutes	85 [10-1420]
Underlying cause	
- Possible airway obstruction	9
- Airway obstruction	7
- Pulmonary hypertension	6
- Delayed transition	4
- Infection	3
- Other (pneumothorax, pulmonary bleeding, esophageal atresia, unknown)	7
Outcome	
- Death	5
- Alive	31
Neurological sequelae suspected	5
Probably no long-term sequelae	26

Data is expressed as number or median [ranges]

Preliminary data after 24 months

- Six SUPC cases occurred at home, 30 in the hospital.
- 24 out of 30 SUPC cases occurred in the delivery room, usually after a spontaneous vaginal delivery.
- Newborn infants were frequently found by hospital staff (60%) on their mother's chest (70%).
- Most mothers (95%) were awake at the time of SUPC.
- Four mothers used their cellphone at the time of SUPC.
- Time of SUPC: 22/36 (64%) <2 hours [85 min (10 min-23.5 h)].
- Infant's pH (median, range): 7.12 (6.54-7.41).
- Underlying cause: possible obstructed airway (n=9), obstructed airway (n=7), pulmonary hypertension (n=6), delayed transition (n=4), infection (n=3), other (n=7).
- Outcome: 5 infants died, 31 survived of whom 5 are suspected to develop neurological sequelae.

Conclusions

- SUPC occurs mainly in the first 2 hours of life in the delivery room, but may also occur at home.
- SUPC is associated with airway compromise (45%), and with specific pathology (55%)
- Antenatal information on safe of skin-to-skin practices (without airway compromise), and close observation of apparently healthy newborn infants may enhance early recognition of imminent SUPC.
- Early recognition of SUPC may improve outcome.
- **Pediatricians are encouraged to report any possible SUPC case until April 2022.**