Sudden Unexpected Postnatal Collapse of a Neonate During Skin-to-Skin Contact

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Abstract

Skin-to-skin contact (SSC) is a well-documented benefits manner for neonates and mothers. Neonates are placed on their mothers’ chest after birth immediately which will contribute to the transition from fetal to extra-uterine life such as stabilizing babies’ respiration, body temperature and blood sugar. Besides, SSC also helps mothers’ recovery after delivery. However, some acute life-threatening events happened during SSC. Herein, we reported the sudden unexpected collapse of a well-appearing full-term baby occurred during SCC and to make health care providers and parents aware of this possible risk.

Keywords: Neonate; Skin-to-skin-contact; Collapse

Abbreviations: SSC: Skin-to-Skin Contact; SIDS: Sudden Infant Death Syndrome; CPR: Cardiorespiratory Resuscitation; SUPC: Sudden Unexpected Postnatal Collapse

Introduction

Early skin-to-skin contact (SSC) is the manner for well-being full-term neonates who were placed on mothers’ bare chest immediately after birth. The duration of SSC was suggested to be continuing until the end of first feeding as to enhance early infant self-regulation [1]. The benefits of SSC have been well documented. It is a best way to stabilize the newborns’ respiration, increase blood glucose level and decrease crying [2]. Besides, it helps the mothers’ recovery from delivery, such as reducing postpartum hemorrhage, shortening time of placenta expulsion, and decreasing maternal oxidative stress [3-5]. Cochrane meta-analyses revealed early SSC as the gold standard in the initiation of breast feeding and has no adverse effects [2,6]. Nevertheless, devastating events occurred during SCC and had been reported [7]. To provide more information about SSC, we reported the sudden unexpected collapse of a well-appearing full-term baby occurred during SCC.

Discussion

Routine separating the newborn from its mother shortly after birth has become common practice in many industrialized societies but was unique to the 20th century. The rationale for SSC came from animal studies which showed that the innate behaviors of neonates necessary for survival were habitat dependent [8]. Separation may affect mothering behaviors 1 year later and decrease the potential for successful breastfeeding [2,9]. The World Health Organization advised SSC could provide a good thermoregulation to babies, and the American academy of pediatrics also recommended that healthy infants should be remained in direct SSC with their mothers immediately after delivery until the first feeding being accomplished [10]. We, like others, practicing routine separating newborn from its mother shortly after birth in the past, started to introduce SSC ten more years ago and have been practicing it smoothly. This catastrophic event, sudden unexpected postnatal collapse (SUPC), is rare [11] and has never been happened before in our hospital. The impact on the neonate, parents, nurses and clinicians are devastating [12].

SUPC refers specifically to unexpected collapse of the neonate. Its definition has overlap with apparent life-threatening event, severe apparent life-threatening event, and SIDS. It is presented as neonatal apnea, bradycardia, cyanosis, limpness, pallor, collapse, and cardiac or respiratory failure, and often occurs in the first 2 hours after birth, frequently during the first breastfeed [11,13]. It has a poor outcome that half of the infant died, and many of the survivors had serious neurological sequelae [14]. The possible risk factors are primiparous mother, first breastfeeding, newborn in prone position, mother in supine position during SSC, maternal opiate analgesia or regional or general anesthesia within 8 hours of event, magnesium sulfate administration during labor, maternal overweight status (body mass index >25 kg/m²), maternal and/or [11,13,15]. Our patient had some of the above risk factors such as primiparous mother and first breastfeeding. The mother was sitting in semi-reclined position with the baby side-lying on her arm, who was in non prone position. Whether there was fatigue was not sure, but the mother was not sleeping. She neither had received general/epidural anesthesia, opiate nor magnesium sulfate, and her BMI was <25 kg/m². The father was recording the process of the delivery from the beginning by video. The baby exhibited good sucking and started to have breastfeeding. All of a sudden, he didn’t move anymore and the father tried to stimulate his son. Meanwhile the nurse had notice the limpness, cyanotic appearance of the baby and initiated the CPR immediately.

The transition from fetal to extra-uterine life could make the newborn more vulnerable during the first hours of life. The physiologic changes taking place in the first 2 hours after birth are dominated by an initial wave of sympathetic activity after the stimuli came upon the delivery process, which disappears rapidly and is followed by a period of diminished responsiveness to external stimuli [16]. The rapid decrease of the adenosine and increase of the prostaglandin occur in...
the microenvironment of the newborns’ brain during and after the delivery process [17,18]. This is encounter as the initial arousal of the newly born babies followed by a period of diminished responsiveness to external stimuli [19]. Besides, decreased oxygen saturation of these babies during SSC was noted in their physiological variety [20]. Given these specific physiologic condition of a vulnerable newborn during the transition to the extrauterine life, thus, reduce the risks and maintain the safety of them during SSC and breastfeeding are mandatory.

In view of documented benefits, professional consensuses continue to promote SSC. However, great caution should be taken in cases of maternal sedation, sepsis, extreme fatigue, primiparous and lack of continuous professional supervision. In addition, the babies should not be placed at prone position with their mothers during SSC, as prone position is a potentially asphyxiating position that could be associated to SUPC and ensuring the angle of maternal recline to facilitate eye-to-eye contact [21,22]. We also discourage the use of mobile phones and texting during birth and the first postnatal hours as this may distracting eye contact [21,22]. We also discourage the use of mobile phones and texting during birth and the first postnatal hours as this may distracting eye contact [21,22]. We also discourage the use of mobile phones and texting during birth and the first postnatal hours as this may distracting eye contact [21,22]. We also discourage the use of mobile phones and texting during birth and the first postnatal hours as this may distracting eye contact [21,22]. We also discourage the use of mobile phones and texting during birth and the first postnatal hours as this may distracting eye contact [21,22].

Even though SUPC is a rare entity, minimizing avoidable risk factors and increasing protective countermeasures, especially during their first hours of life, may enable us to reduce the harm to the neonate and heartache to the parents, in addition to prevent the occurrence of further cases.

References
1. Widstrom AM, Lilja G, Aaltonen-Michailas P, Dahllof A, Lintula M, et al. (2011) N Breast when skin-to-skin: A possible method for enabling early self-regulation. Acta Paediatr 100: 79-85.
2. Moore ER, Anderson GC, Bergman N, Dowswell T (2012) Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database Syst Rev 16: C0003519.
3. Dordovic G, Jovanovic B, Dordevic M (2008) An early contact with the baby: Benefit for the mother. Med Pregl 61: 576-579.
4. Marin GMA, Llana Martin I, Lopez Escobar A, Fernandez Villaba E, Romero Blanco I, et al. (2010) Randomized controlled trial of early skin-to-skin contact: Effects on the mother and the newborn. Acta Paediatr 99: 1630-1634.
5. Yuksel B, Ital I, Balaban O, Kocak E, Seven A, et al. (2016) Immediate breastfeeding and skin-to-skin contact during cesarean section decreases maternal oxidative stress: A prospective randomized case-controlled study. J Matern Fetal Neonatal Med 29:2691-2696.
6. Anderson GC, Moore E, Hepworth J, Bergman N (2003) Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database Syst Rev. 11:CD003519.
7. Nakamura T, Sano Y (2008) Two cases of infants who needed cardiopulmonary resuscitation during early skin-to-skin contact with mother. J Obstet Gynaecol Res 34: 603-604.
8. Alberts JR (1994) Learning as adaptation of the infant. Acta Paediatr 397: 77-85.
9. Bystrova K, Ivano VA, Edhborg M, Matthiesen AS, Ransjo-Arvidson AB, et al. (2009) Early contact versus separation: Effects on mother-infant interaction one year later. Birth 36: 97-109.
10. Section on Breastfeeding (2012) Breastfeeding and the use of human milk. Pediatrics 129: e827-e841.
11. Poets A, Steinfeldt R, Poets CF (2011) Sudden deaths and severe apparent life-threatening events in term infants within 24 hours of birth. Pediatrics. 127: e869-e873.
12. Wickham S (2016) The ALTE mysteries: Who’s to blame? Pract Midwife 19: 35-36.
13. Becher JC, Bhushan SS, Lyon AJ (2012) Unexpected collapse in apparently healthy newborns—a prospective national study of a missing cohort of neonatal deaths and near-death events. Arch Dis Child Fetal Neonatal Ed 97:F30-F34.
14. Herlenius E, Kuhn P (2013) Sudden unexpected postnatal collapse of newborn infants: A review of cases, definitions, risks, and preventive measures. Transl Stroke Res 4:236-247.
15. Pejovic NJ, Herlenius E (2013) Unexpected collapse of healthy newborn infants: Risk factors, supervision and hypothermia treatment. Acta Paediatr 102:680-688.
16. Desmond MM, Franklin RR, Vallvona C, Hill RM, Plumb R, et al. (1963) The clinical behavior of the newly born. I. The term baby. J Pediatr 62: 307-325.
17. Herlenius E (2011) An inflammatory pathway to apnea and autonomic dysregulation. Respir Physiol Neurobiol 178:449-457.
18. Mitchell MD, Lucas A, Etches PC, Brunt JD, Turnbull AC (1978) Plasma prostaglandin levels during early neonatal life following term and pre-term delivery. Prostaglandins 16: 319-326.
19. Cohen G, Katz-Salamon M, Malcolm G (2012) A key circulatory defence against asphyxia in infancy—the heart of the matter! J Physiol 590: 6157-6165.
20. Mori R, Khanna R, Pledge D, Nakayama T (2010) Meta-analysis of physiological effects of skin-to-skin contact for newborns and mothers. Pediart Int 52: 161-170.
21. Poets A, Urschitz MS, Steinfeldt R, Poets CF (2012) Risk factors for early sudden deaths and severe apparent life-threatening events. Arch Dis Child Fetal Neonatal Ed 97: F395-397.
22. Colson S (2014) Does the mother’s posture have a protective role to play during skin-to-skin contact? Research Observations and Theories. Clinical Lactation 5: 41-50.