

Near-drowning during Baby Swimming Lesson

Beinahe-Ertrinken während Babytauchen

Background

The so-called baby swimming has been popular since the 1970s. Knowing that fetuses mature in a liquid environment the winding movements of their bodies have been interpreted as swimming movements. Early swimming lessons are sometimes recommended for achieving water acclimatization and safety in the water in a playful way and have been claimed to improve neurodevelopment and to protect from drowning.

Case description

We report the case of a 6-weeks-old male infant suffering from an apparently life-threatening event during a baby swimming lesson in a public swimming pool. The following course of events was revealed to the paramedics called to the scene: the baby and his mother had been together in the pool under supervision of a midwife during a baby swimming class. The baby had been intentionally submerged twice under the surface of the water for a few seconds while lying on the mother's arms in order to "dive". During this procedure the baby did neither cough nor vomit. After surfacing from the water, he cried initially, but then stopped suddenly. Covered by a towel, he was carried out of the water when the mother noticed the baby to be floppy and cyanotic. Vigorous stimulation was unsuccessful, and mouth-to-nose resuscitation was initiated by the midwife, followed by bag-mask ventilation and supplemental oxygen. The heart rate had been persistently above 60 beats/min. A small amount of blood was coming from the baby's mouth. The mother reported that the infant had been healthy since birth without any signs of infection. The baby had been born at home at 36+1/7 gestational weeks via an uncomplicated water birth under supervision of a midwife. No administration of vitamin K, no newborn metabolic screen and no physical examination by a pediatrician had been taking place so far. When the emergency medical services arrived the child was in critical condition, having a pale and floppy appearance and a heart rate of 100 beats/min. He was

taking only intermittent gasping breaths requiring bag-mask ventilation and supplemental oxygen.

After securing the airway, an intraosseous access was established, and a fluid bolus was given before the baby was transported to the near-by university hospital. On arrival the boy was awake, very agitated and opisthotone with slight dyspnea but was breathing spontaneously receiving supplemental oxygen only. He was pale, his rectal temperature was 36.4° celsius, and his blood pressure was within normal limits.

The x-ray of the chest showed consolidation with a positive bronchoaerogram of the right middle lobe and left upper lobe compatible with alveolar infiltrates suggesting aspiration or ARDS. There was a severe metabolic acidosis with a pH of 7.06, a base deficit of -10mmol/L and a lactate of 8mmol/L. The blood count showed an increased number of leukocytes, coagulation parameters were normal. The liquor count showed no white cells, neither a virus nor bacteria were detected. The blood culture remained negative. Echocardiography, ECG, EEG as well as cranial ultrasound were without pathological findings.

After admission to our intensive care unit the child showed gradual improvement of dyspnea. Oxygen therapy was discontinued a few hours later. Diagnostics were completed and the infant stayed in the hospital for further therapy and observation for a couple of days.

After several intense discussions with the parents concerning endangerment of the child's welfare, they agreed on the consultation of a private pediatrician and on reporting to the Youth Welfare Office (Jugendamt) in charge. The mother herself is supervising baby swimming classes where babies are submerged under water. She had not been aware of any risk for drowning.

Discussion

A large number of baby swimming classes are offered in Germany at this point in time, some of them by providers with medical background. The classes are intensively advertised as a good way to increase drowning-related safety. Submerging the babies is a widely spread practice. It is

explicitly advertised with reference to the baby's prenatal time spent "underwater" and supposed to protect against drowning by the so-called "breath-holding-response" that may be trained.

While broad discussions on the internet about swimming and diving classes of infants and toddlers can be found, there are barely any scientifically based statements on this topic. Publications regarding baby swimming focus on infectious and respiratory diseases, on the effects on the baby's skin, and on the positive impact on children's physical mobility (A Bernard, M Nickmilder Arch Dis Child 2006; 91: 620-621). The American Academy of Pediatrics emphasizes that aquatic programs for infants and toddlers cannot be recommended to possibly reduce the likelihood of drowning and points out the risk of water hazards (American Academy of Pediatrics Committee on Sports Medicine and Fitness and Committee on Injury and Poison Prevention. Pediatrics 2000; 105: 868-870.).

Baby swimming may be associated with an increased incidence of upper airway infections. To our knowledge, data concerning incidents of cardiopulmonary resuscitation in the context of baby swimming or intentional submerging have not been published.

Fortunately, the infant survived and does not have any signs of neurologic impairment. This case shows that aspiration can be provoked by submerging healthy infants beneath the water surface (Scott DeBoer, Ella Scott Australian Emergency Nursing Journal 2006; 6: 27-38; Sachdeva R.. Crit Care Clin 1999; 15: 281-296.). The claimed protection of infants against drowning by the breath-holding-reflex does not offer sufficient protection against life-threatening events.

Conclusion

- ▶ The hypothesis that infants are safe while diving due to the breath-holding reflex has to be critically questioned.
- ▶ Parents participating in aquatic classes have to be provided with objective information concerning this matter.
- ▶ Given the possible risk of aspiration and a paucity of data demonstrating any advantages of intentional submerision we strongly discourage this practice during baby swimming classes.

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