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Refractory shoulder dystocia in term macrosomic newborn with verified complete meningoencephalomyelocele

Case report

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Abstract: The authors presented the birth course, in a primiparous woman with complicated, refractory, high shoulder dystocia, of a macrosomic term-born malformed child (4400/54) with complete occipital meningoencephalomyelocele and microcephaly. After head delivery, high shoulder dystocia occurred that could not be resolved with neither the McRoberts or Resnik maneuver nor with the Woods and Barnum maneuvers, despite recurred tries. Only on third attempt with the Barnum maneuver was the posterior arm released with hand traction, followed by the whole body of the macrosomic baby. The child was transferred to the Neurosurgery department where operative correction was performed, and after the intervention the child died because of respiratory insufficiency. Due to the strict parental decision on pregnancy continuation and prohibition of any obstetric interventions during delivery, unborn child and parturient, as well as the obstetric team, were put into high professional, forensic and ethical risk.

Keywords: *Shoulder dystocia • Maneuvers • Meningoencephalomyelocele • Fetal macrosomia • Risk*

1. Introduction

Shoulder dystocia (SD) is an unpredictable obstetric emergency where biacromial diameter is obstructed in anteroposterior diameter of the pelvic inlet (high SD) or in transversal diameter of the pelvic outlet (deep SD). It is a complication of vaginal birth defined by shoulder incarceration due to fetopelvic disproportion or malrotation. Besides macrosomia, important fetal risk factors for development of SD are fetal anomalies and tumors, especially head and neck tumors which tend to disturb normal birth course during the child's passage through the birth canal [1-3].

In this article, we show the birth course in a primiparous woman with complicated, refractory, high SD of a macrosomic term-born malformed child with complete occipital meningoencephalomyelocele and microcephaly.

2. Case report

A 28-year old healthy primigravida with verified fetal meningoencephalomyelocele and microcephaly was admitted to our Clinic in her 41st week of gestation for pregnancy termination. The married couple, both with university education, was informed of the complex brain malformations – meningoencephalomyelocele and microcephaly – and pregnancy outcome starting from her 14th week of gestation. Due to personal reasons, they refused pregnancy termination and karyotyping, as well as any sort of obstetrical intervention such as cesarean delivery or episiotomy to be performed during delivery. During the gestation period no appreciable disease was observed except from the above mentioned and verified fetal macrosomia. The birth started spontaneously with labor in her 41st week of gestation. At the moment of cervix dilation reaching 5 cm, amniotomy was

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performed and clear amniotic fluid was obtained. Meningoencephalomyelocele as the presenting part could then easily be palpated. With spontaneous labor, alleviated with spasmoanalgesia (petantin 50 mg i.m.), delivery was within partogram. The first structure to be delivered was the previously described herniation, followed after few minutes by the microcephalic head in dorsoposterior occipital position. After head delivery, high SD occurred that could not be resolved with neither the McRoberts or Resnik maneuver nor with the Woods and Barnum maneuvers, despite recurred tries. Only on the third attempt with the Barnum maneuver was the posterior arm released with hand traction, followed by the whole body of the macrosomic baby. The baby was handed over to the neonatologist for further care. Apgar scores were 5 and 7; birth measures were 4400 grams and 54 centimeters; the baby was reanimated. The macrosomic male child was delivered with complete occipital meningoencephalomyelocele and significant microcephaly, but without recent peripartal injuries (Figure 1). The child was transferred to the neonatal ward to wait for further transfer to the Neurosurgery department of the Children's hospital where operative correction was performed. However, after the intervention the child died because of respiratory insufficiency.

Uterine atony occurred after the delivery. Eventually the uterus contracted and bleeding stopped, but only after uterine massage and exploration were performed and adequate pharmacotherapy was introduced. Namely, crystalloid, colloid and syntocinon infusions, intravenous methylergometrin and Carboprost intracervical injections were used. Laboratory values of hemoglobin and coagulation were within normal values. Second/third degree perioneovaginal rupture was revised and sutured. Puerperium was of normal course and post-puerperal checkout showed normal gynecological findings.

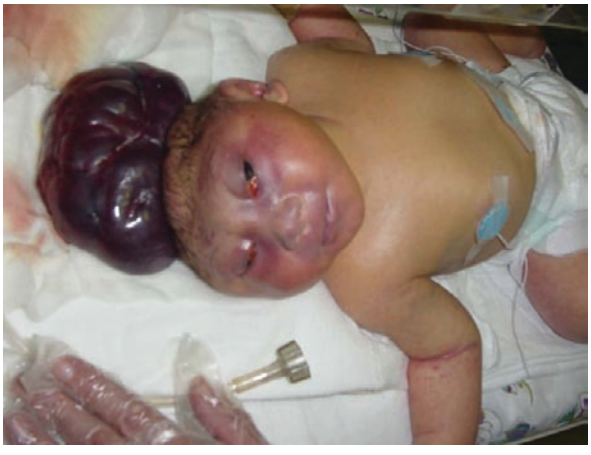
3. Discussion

SD is related to high perinatal and maternal mortality and morbidity. Perinatal mortality in SD ranges from 1,9 to 29,0 with mortality sub partu of 7,9% and neonatal mortality of 2,9%. Mortality and morbidity are much higher in high SD than in deep SD. Chief mortality causes are peracute asphyxia due to umbilical cord compression, protracted expulsion period and extensive peripartal injuries [1-4].

Meningoencephalomyelocele is a synonym for meningeal herniation containing the spinal cord and brain with incidence varying from 0,8 to 1,2 every 10000 deliveries. It is a disorder of fetal head formation with inability of the neural tube to close in medial line. It can occur independently or as a part of autosomal recessive syndromes like Knoblock, Roberts, Chemnike syndrome, cryptophthalmus syndrome and dyssegmental dysmorphism. Often, other anomalies of the central nervous system such as hydrocephalus in 80% and spina bifida in 7-15% are associated with this condition. Also, microcephaly occurs in 20% of all cases [5-8].

In our case, SD occurred as a result of several risk factors: protracted second phase of delivery caused by delivery of cephalocele first and then of the microcephalic head in dorsoposterior position; macrosomia and disturbed delivery biomechanic; high SD occurring with front shoulder incarceration under symphysis. The shoulder could not be released with the McRoberts manueuver, Resniks suprapubic pressure, Wood screw maneuver, or with two repeated tries of the Barnum maneuver. Only when the latter was attempted for the third time, the posterior hand was finally extracted after releasing it in sacral fossa, after which first the posterior shoulder was delivered, immediately followed by the anterior shoulder. This particular parturient outcome was a consequence of severe SD and obstetrical maneuvers. Primary postpartal hemorrhage developed with perineovaginal lacerations of II/III degree. Fresh peripartal injuries had not been found in the newborn, although refractory SD itself and difficult obstetrical maneuvers are risk factors for SD-related peripartal injuries. Consequently, persistent brachial palsy with irreversible changes found in about 3% of patients one year after birth, with recovery in upper brachial palsy possible in about

Figure 1. Macrosomic newborn with complete occipital meningoencephalomyelocele and microcephaly



80% (Duchen-Erb) and in lower in 40% of cases (Klumpke). About 40% of SD appears in children with birth weight below 4000g, although fetal macrosomia in babies with birth weight above 4000-4500g is also a predicting factor for development of SD, usually because of relative fetopelvine disproportion [9,10]. Injuries in newborns tend to develop as a consequence of any of the following two conditions – either protracted shoulder incarceration (hypoxia/acidosis), or complications as a consequence of hand maneuvers (uncritical head and neck traction-spinal cord injury without radiographic abnormalities /SCIWORA/, brachial palsy, injuries of neck organs). Brachial palsy is a result of extensive fetal head traction/rotation, and increased incidence of cesarean delivery did not significantly reduce its incidence [1,3,11].

We have described the birth course in a primipara with difficult, refractory SD of a macrosomic, term baby with antenataly-verified meningoencephalomyelocele. Due to strict parental decision on pregnancy continuation and prohibition of any obstetric interventions during delivery, unborn child and parturient, as well as the obstetric team were put into high professional, forensic and ethical risk because it was very complicated situation for doctors [2,12].

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