aEEG monitoring in Periventricular Leukomalacia (PVL)

Patient characteristics

Preterm Male infant born at 27 weeks and 6 days gestation. Born to a 19 year old Primigravida mother. The pregnancy was uncomplicated until the day of birth when spontaneous labor started and a slight vaginal bleed was noted. Mother had no perinatal fever. On arrival to the hospital treatment was initiated with antibiotics and Magnesium Sulphate and an initial dose of Betamethasone was given. Two hours after arrival to the hospital, the mother delivered vaginally.

Initial assessment

The infant was born with an intact amniotic sac. Upon delivery he needed ventilatory support and due his oxygen needs received a surfactant dose in the delivery room. Apgar scores were 5 and 8 at 1 and 5 minutes respectively, and the baby was transferred to the NICU for post-delivery care.

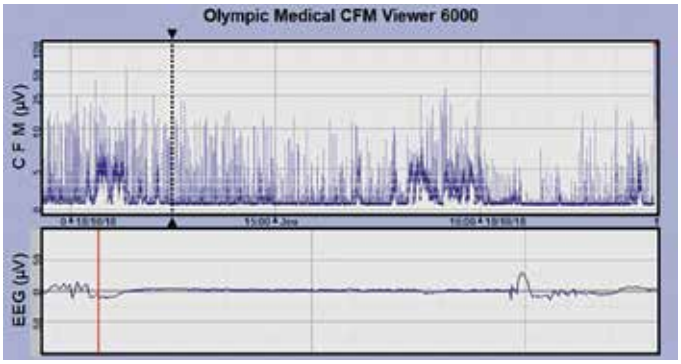

Figure 1

Initial impression and physical examination

The physical examination of the baby was appropriate for his gestational age, with weight of 1100 grams, and head circumference 26 cm (70th centile). Upon arrival to the NICU he was in room air and was successfully extubated at the age of 12 hours to nasal CPAP. The baby was otherwise stable with normal blood count, blood gases and blood chemistry.

As per clinical routine in our NICU for all babies under 28 weeks gestation, brain monitoring with bedside aEEG was initiated after stabilization at the age of 4 hours. Contrary to his clinical condition, the aEEG was depressed with low voltage burst suppression activity (figure 1).

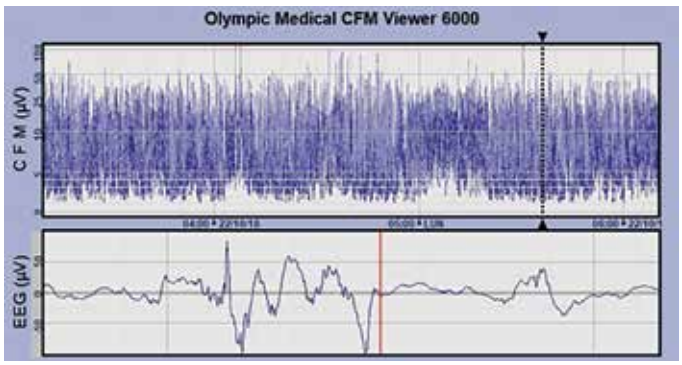

Figure 2

Clinical course

On Day 4 of life, there was an amelioration in the cerebral activity and a discontinuous aEEG pattern was noted (figure 2). At the same time, coarse periventricular echo-densities were noted in the cerebral ultrasonography (figure 3).

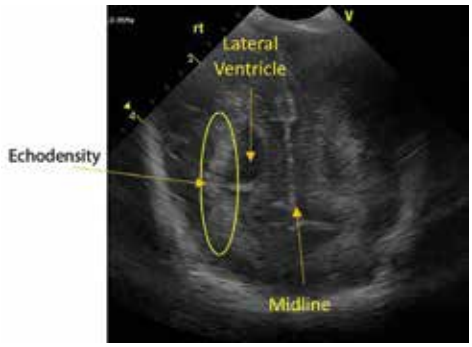

Figure 3

On Day 6, the baby underwent a full one-hour cEEG in which frequent positive temporal and Rolandic (central) sharp waves were noted. In the third week of life periventricular cysts were demonstrated in a repeat brain ultrasonography (figure 4).

Beside recurrent apneas of prematurity, the hospitalization was uneventful and the baby was discharged home at 38 weeks corrected age weighing 2055 gr with a head circumference of 32 cm (first and 13th centile per age respectively). On examination before discharge the baby was tracking, but a general muscular hypertonicity was noted (more pronounced in the lower limbs) and poor movement variety.

Discussion

The process of being born prematurely is complicated and probably always involves some kind of pathological processes. In the extremely premature newborn there is a high risk of concomitant involvement of the CNS and therefore aEEG brain monitoring may help in pointing out neuropathology. In this case, though there is no doubt that serial ultrasonography would have made a correct diagnosis, however the early neuromonitoring helped in the recognition of a neuropathology that probably antedated birth.

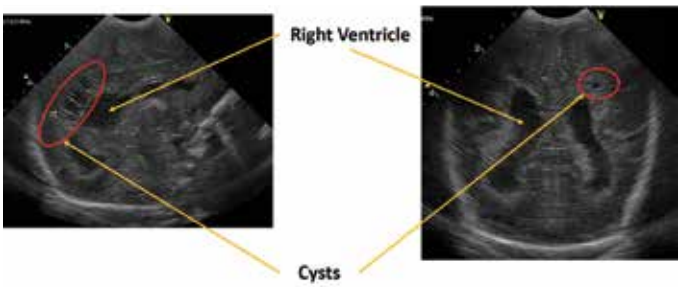

Figure 4

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