

Deoxygenation during Pregnancy and Labor

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Abstract

In the past century medicine has changed dramatically; where once the plague and polio were an epidemic and a death sentence, now they are rare in their occurrence because of vaccination. On that scenario, complication of birth a 100-year-ago could cause the death of both mother and child. Moreover, pregnancy was very threatening to both mothers' and babies' lives, since as simple as if the parents had different blood types. Today, this issue among other serious problem has been resolved and manageable by a very reliant and expert team of physicians, and researchers. Where there is prenatal care which have been devolved to serve its sole purpose to make sure a healthy mother gets to hold her healthy baby at the end of her nine months of pregnancy. However, there are sometimes when that same team not fail but rather miss overseeing an issue that lead to serious health complications endanger the unborn child. Research evidence had shown that with taking all precautions, few conditions could result either during pregnancy or complication of labor. Two cases of an infant baby girls had crossed pathed with me, one was common while the other is considered rare; the first condition was diagnosed with a blood disorder called alpha thalassemia, and the second had had suffered from a sided paralysis caused by a conditioned called hydrocephalus ex-vacuo prominence. Both girls are taking therapy sessions to minimize the affects these conditions had had on their body.

Keywords: *Deoxygenation; Pregnancy; Labor*

Background Research

There have been numerous studies and research throughout the past century on the importance of prenatal care and follow-ups the whole pregnancy period. Furthermore, nonetheless most if not all pregnant women have attended every check-up appointment and took all required measures to have a healthy child, there are few documented cases where medicine have failed them. It either goes undiagnosed during pregnancy or undergoes complications during delivery that leave the infant with no oxygen supply for some time.

In a systematic review; of 16,143 articles only 38 met the intended criteria, Veena., et al. [1] had explored the evidence on the association between maternal nutritional status during pregnancy and offspring's cognitive function during childhood and adolescence. Based on observational studies, there was a consistence evidence that maternal obesity is associated with lower cognitive function in children. According to 5 studies from developed countries an association had been found to link low BMI with lower cognitive scores in children; however, that was insignificant due to a number of factors. On the other hand, two studies had shown a significant higher risk of delayed

mental development (risk ratio = 1.36), lower IQ scores or mild intellectual disability (OR = 2.1) in children of underweight mothers. Thus, nutrient deficiencies might lead to alteration in the neurotransmitter and neuroendocrine systems, and structural brain development, which subsequently reduces cognitive function. Furthermore, of 6 studies on gestational weight gain only 3 showed a link of abnormal maternal weight status; maternal undernutrition or over nutrition, with poorer cognitive function in offspring.

Moreover, Xinxo, *et al.* [2] had also investigated the relation between maternal nutritional status of pre-pregnancy and gestational weight gain. However, the aim of this study was to relate it to birth patten and preterm birth mainly. Using the recommend weight gain range by the Insatiate of Medicine (IOM) as a base, 300 Albanian women (nulliparas) had been chosen to be take part in this controlled case study. The examiners had investigated the difference between 150 women who had a preterm birth (experimental) with 150 women who had normal delivery (control). The data was self-reported including weight and height of pre-pregnancy weight. The findings showed that the percentage of abnormal gestational weight gain (underweight/overweight) is higher in preterm birth compared with the control group. Consequently, this study makes a clear and significant relation that abnormal gestational weight gain is directly related to preterm birth (OR = 1.8; $p < 0.05$), which suggests that the risk of preterm birth doubles in abnormal weight gain mothers.

Nonetheless, Hanson [3] had explored a different approach to investigate ways to improve maternal and fetal outcome during delivery at second stage labor using the Valsalva menuver. She randomly selected 320 anaesthetized low-risk expectant mothers (nulliparas) and assigned them into two groups; the control group (163 subject) was assigned to being couched to bear down for 10 seconds during the peak of contraction, while the experimental group (157) was left with no couching and told to “do what comes naturally” at any comfortable position. As a result, the control group had had a shortening of approximately 13 minutes of the second stage labor deviation compared to the experimental group. Hanson concluded that the physiological approach to delivery differs for each mother and supporting these physiological needs by directed maternal bearing down in the face of deviation in second stage progress tends to improve maternal and fetal outcome. Therefore, bringing this knowledge to nursing care and midwives at the bedside helps providing best care despite any complication that may occur in labor progress. Based on this scientific evidence the nursing care should be reevaluated within the physiologic care framework to avoid the use of Valsalva bearing down deviation, which intended to reduce the potential negative associated with maternal and fetal outcome. Unfortunately, attempting to widespread this technique had no success.

The following cases are based on this research evidence.

Case 1

This patient is a 3-year-old girl, who according to her mother had suffered from interruption of blood flow as a fetus that led to cesarean section. Shortly after birth she was diagnoses with alpha thalassemia or as commonly known as hemoglobin Bart hydrops fetalis (Hb Bart) syndrome.

“Hb Bart syndrome is characterized by hydrops fetalis, a condition in which excess fluid builds up in the body before birth [4]”.

“In people with the characteristic features of alpha thalassemia, a reduction in the amount of hemoglobin prevents enough oxygen from reaching the body's tissues. Affected individuals also have a shortage of red blood cells (anemia), which can cause pale skin, weakness, fatigue, and more serious complications [4]”.

According to the Genetic Home Reference, this condition is fairly common in the middle east that have many symptoms including; excess fluid buildups might lead to enlarged liver and spleen (hepatosplenomegaly), heart defects, and abnormalities of the urinary system or genitalia. These symptoms can exaggerate to sever serious health problems that most babies diagnose with this condition are stillborn or die shortly after birth.

In our case, a computerized tomography scan of the patient's brain had shown softening of the white matter surrounding the brain cavities, which can explain the patient's delayed cognitive and motor function. The patient has had excess tension in her muscle with diffi-

culty controlling her head; thus, her pediatrician recommended physiotherapy. Today, after 2 and a half year of physiotherapy the patient is able to support her own head, sit while distracted; however, still have excess tension throughout her muscle and is unable to stand on her own. Moreover, in accordance to the previously mentioned research, poor nutritional gestation is directly related to reduced cognitive abilities. Having said that, the patient's cognitive abilities are not within normal range among normal three- year old. She is able to understand what's being said to her and communicate in her own way; however, her verbal development is far behind from children her age, since she can only sound few words. The patient is still to present day takes therapy sessions.

Case 2

This patient is a 2-year-old girl, who during spontaneous vertex delivery undergo complications that left her deoxygenated for some time. She was diagnosed with hydrocephalus ex- vacuo prominence that lead to right-sided hemiplegia (paralysis of one side of the body), that cause muscle weakness and spasm in the right ankle and wrist. Which resulted from left-sided periventricular focal area of the chronic ischemic insult due to hydrocephalus condition.

"Hydrocephalus is an abnormal buildup of cerebrospinal fluid (CSF) in the ventricles of the brain. The fluid is most often under increased pressure and that pressure can compress and damage the brain [5]".

This condition is not as common as in the previous case, it affects approximately 1 in every 500 children. Also, it is hard to link to any geographically area or account for the number of documents cases, since there is no national registrar for it. The causes leading to this condition are still unclear and vary from genetic abnormalities to complication of premature birth.

The patient's mother reported limited movement growing up and learning to sit. At the age of 17 months she started to tip toe walking and was recommended physiotherapy. The patient has been in treatment for about 5 months now and is capable to putting her weight on her feet while standing on the tilt table; however, is having hard time walking normally. The patient is still to present day takes therapy sessions.

Discussion and Conclusion

As the research community progress every day and present us (healthcare professionals) with more and more data, medicine had had progressed through years and there may come a day where conditions like these seized to exist. Evidently, prenatal care and bedside care is so much better now that it was 50 years ago, even midwives have better knowledge now on how to handle complication during labor. These two cases are a prove of a loving family who had done all they could and followed all prenatal care they know of to have a healthy child, yet they were faced with these tragic diagnoses of their newborns. However, that have not stopped them from loving their baby and giving her all they could possibly afford, to bring her up the best way possible and as normal as possible to children her age. Thus, for these two families and a lot more in their place, we in the research community owe it to them to find a solution in order other families don't have the same fate.

Furthermore, as once polio was a threat to children's lives, nowadays, there are just a handful number of cases registered since the invitation of vaccination. Perhaps one day in the near future a wide study would take place to lay the ground roles of the reasons such conditions could prevail. We are very hopeful to come to a day, where we could say that we had overpowered these conditions just like we have with polio.

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