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Case Report

A case report of incidentally elevated maternal serum alkaline phosphatase managed in a poor resource setting

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ABSTRACT

The normal serum concentration of alkaline phosphatase (ALP) in adults ranges from 47 to 147 IU/l. Alkaline phosphatase is known to be produced by syncytiotrophoblasts in the placenta during pregnancy. Its levels are normally increased in pregnant women and levels of up to twice the upper limit can be considered normal. There have been case reports pointing out that an abnormal rise in serum ALP levels could be a marker for placental insufficiency preterm delivery. Here we report a case with delivery of a normal infant and no placental pathology at term. There are very few reports of extreme elevations of ALP in a pregnancy without any co-morbidities and delivery of normal infant with a subsequent decline to normal after delivery. We present the case of a 23-year-old pregnant woman with an incidentally detected 10 fold elevated serum ALP which was managed at a sub district level hospital which is a poor resource setting. She was expectantly managed and delivered a healthy new-born with an unremarkable intrapartum and post-partum period. Her ALP levels were monitored during the peri-partum period and gradually declined. This case is important because it shows that an isolated increase in a biochemical marker can give a good feto-maternal outcome after expectant and vigilant management.

Keywords: Alkaline phosphatase, Incidental, Elevation, Pregnancy

INTRODUCTION

Elevated serum ALP is quite a common occurrence in pregnant patients however it is usually within twice the upper limit of the normal range.[1] When a clinician sees a placental insufficiency and preterm delivery atypically or extremely elevated serum ALP level, it can be upsetting to both, the obstetrician and the patient, especially when it is unknown what the consequences may be. Some retrospective and prospective cohort studies have shown that ALP could be a marker for large for gestational age foetus, preterm delivery, placental insufficiency and intrauterine growth restriction.[2-4] There is currently a scarcity of cases in which exaggerated increases are observed with a subsequent normal outcome. This case serves to add to the literature as a demonstration that even abnormal elevations of ALP do not reliably predict feto-maternal pathology. This case highlights the association between a very abnormal biochemical value and good feto-maternal outcomes after expectant management.

CASE REPORT

A 23-year-old woman, gravida 2 para 1, received routine prenatal care at a sub district level hospital at Chicalim, Goa, India. Her obstetric history was not significant. Her routine laboratory tests were unremarkable, including a negative hepatitis B surface antigen test and a normal glucose tolerance test at 24 weeks. An anatomy ultrasound at 16 weeks of gestation was within normal limits and her placental location was posterior. As per the norm of our hospital her routine blood panel, which includes liver and kidney function tests, was ordered when the patient had reached term pregnancy (38 weeks of gestation), routine

antenatal care was provided and the patient was asked to follow-up to the out-patient clinic with her reports. Her workup was otherwise not significant except for the incidentally detected elevated ALP level of 1500 IU/l.

Patient presented to us in early labour at 40 weeks of gestation, a repeat serum ALP test was ordered and showed a continued ALP elevation, at 957 IU/l. She did not have any other signs of hepatic dysfunction such as icterus, itching, discolouration of urine or stools and no prior history of liver, kidney and bone disease. Her obstetric examination was consistently appropriate for gestational age. Owing to cost restraint for the patient, we could not order an isoenzyme differentiation test.

As the patient had presented to us in early labor and all her other investigation were normal, decision was taken to augment her labor with oxytocin. Continuous electronic foetal heart monitoring was done. She had a successful vaginal delivery of a healthy baby girl weighing 2600 g with a 1 and 5 min Apgar score of 8 and 9 respectively. The placenta was inspected at delivery and there were no gross anatomical abnormalities detected. She received routine postpartum care. Her ALP level, checked on first postpartum day was 137 IU/l which is within the normal range for an adult female. As the patient did not have any other signs and symptoms of hepatic dysfunction, she was discharged and asked to follow up to routine post-partum clinic after one week however this patient was lost to follow up.

In a country like India even routine obstetric care is considered a luxury and not available freely to all. Home deliveries, with all their risks and complications, are quite a common occurrence. Hence it is very important to manage such cases with the available resources. In the case of this patient, as she did not have any other high risk factors and no discernible hepatic dysfunction, we decided to have a highly vigilant approach and were successful. This case is important because it highlights the association between a very abnormal biochemical value and good feto-maternal outcomes after expectant management.

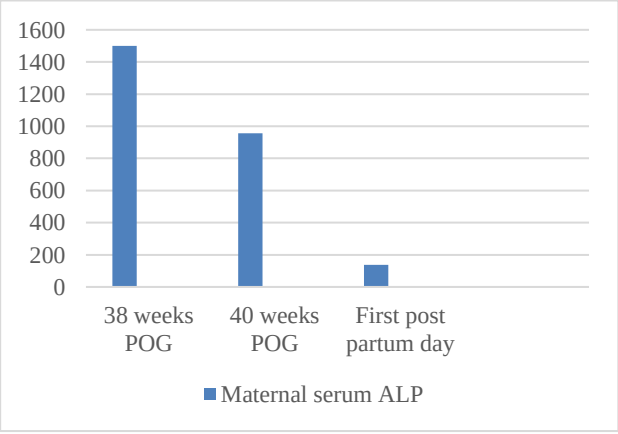

Figure 1: The drastic decrease of maternal serum ALP levels to normal post-partum.

DISCUSSION

Alkaline phosphatases are a group of isoenzymes, located on the outer layer of the cell membrane. They catalyse the hydrolysis of organic phosphate esters present in the extracellular space. Alkaline phosphatase is found in all tissues throughout the human body and is concentrated highest in bone, liver, kidney, intestinal and placental tissue many of which have their own specific isoenzyme. The major function of alkaline phosphatase is transporting chemicals across cell membranes.[5]

Alkaline phosphatase can be elevated in a number of conditions which could be hepatic or extra-hepatic. Usually enzymes and proteins are released when there is damage to tissue or organ, and thus, their level is increased. We classically see moderate increases in ALP associated with liver disease, which has many aetiologies. If the cause for alkaline phosphatase elevation is unknown, isoenzyme studies using electrophoresis can confirm the source of the ALP and should be the first step in evaluation. If there are abnormalities in other liver function tests, confirmation is usually not required, as it would suggest a hepatic aetiology.

The mechanism behind this abnormal isolated elevation of ALP is not fully understood. In a retrospective study by Wilkof-Segev et al a review of cases with an extreme elevation of ALP in pregnancy during the period of eight years was conducted. They concluded that the obstetric complications were higher, with 57% of the cases registering some perinatal complication during pregnancy, namely hypertension, gestational diabetes, and preterm delivery.[6]

Our patient was fortunate and did not have any gross placental abnormalities, such as lacunae, infarctions or calcifications and as the location of the placenta was posterior, concern was low for abnormal placentation.

With this case report we wish to highlight that isolated elevation in serum ALP level in the backdrop of absolutely normal liver function and other biochemical investigations and no discernible liver or placental pathology a patient can have a normal outcome for both the mother and the baby and that such a case can be managed even at a primary or poor resource setting thus adding to decreasing the burden on the already overburdened tertiary care hospitals.

CONCLUSION

Extreme elevations in alkaline phosphatase during pregnancy may be expectantly managed with a highly vigilant outlook in the absence of other feto-maternal considerations.

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