

Sialic acid (NANA) levels in women with and without previous gestation

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Abstract

Background: Sialic acids are a family of nine-carbon acidic monosaccharides that occur naturally at the end of sugar chains attached to the surfaces of cells and soluble proteins. Serum Sialic acid has recently gained interest as a possible cardiovascular risk factor as well as a potential tumor marker. The effect of pregnancy/pregnancies on serum Sialic acid is unclear, particularly in the post-partum period. **Aim:** To study the level of sialic acid levels in women with and without previous gestation. **Materials and Methods:** Serum sample was taken between 37 and 42 weeks of gestation; in 20 primigravida women this was followed by a second serum sample at 12 weeks postpartum. Serum sample was collected and assayed for levels of sialic acid in 20 pregnant women who were gestational for the second time followed by a second sample at 12 weeks postpartum. Serum sialic acid concentration was also measured in non-pregnant age matched controls. **Result:** Serum sialic acid was significantly higher in primigravida group (n = 20): 70.7 +/- 8.9 mg/dl when compared to expectant mothers who were gestational more than once (n=20) group: 64.5 +/- 5.3 mg/dl. Serum sialic acid values were also higher in the post-partum group (n = 40): 67.4 +/- 4.6 mg/dl when compared to control group (n = 20). **Conclusion:** The elevated level of serum sialic acid in primigravida and subsequent pregnancies establishes that sialic acid is indeed elevated in pregnancy. The possible role/various roles of elevated sialic acid in pregnancy need extensive research targeting specifically metabolic syndrome.

Keywords: Sialic acid, gestation.

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transmission. Serum Sialic acid has recently gained interest as a possible cardiovascular risk factor as well as a potential tumor marker. The effect of pregnancy/pregnancies on serum Sialic acid is unclear, particularly in the post-partum period. This study tested the hypothesis that Serum sialic acid may be altered in pregnancies.

AIMS AND OBJECTIVE

To study the level of sialic acid levels in women with and without previous gestation.

MATERIAL AND METHODS

Abcam's Sialic Acid (NANA) Assay Kit was used for measuring Free Sialic acid in the serum samples. Serum sample was taken between 37 and 42 weeks of gestation; in 20 primigravida women this was followed by a second serum sample at 12 weeks postpartum. Serum sample was collected and assayed for levels of sialic acid in 20 pregnant women who were gestational for the second

INTRODUCTION

Sialic acids are a family of nine-carbon acidic monosaccharides that occur naturally at the end of sugar chains attached to the surfaces of cells and soluble proteins. In the human body, the highest concentration of sialic acid (as N-acetylneuraminic acid) occurs in the brain where it participates as an integral part of ganglioside structure in synaptogenesis and neural

time followed by a second sample at 12 weeks postpartum. Serum sialic acid concentration was also measured in non-pregnant age matched controls. All the above samples were collected ruling out gestational diabetes and other complications including malignancies.

RESULT

Serum sialic acid was significantly higher in primigravida group (n = 20): 70.7 +/- 8.9 mg/dl when compared to expectant mothers who were gestational more than once (n=20) group: 64.5 +/- 5.3 mg/dl. Serum sialic acid values were also higher in the post-partum group (n = 40): 67.4 +/- 4.6 mg/dl when compared to control group (n = 20). Table no.1 and diagram no 1 show the sialic acid levels in different groups by comparing with controls. Serum levels of sialic acid were significantly higher in the primigravida mothers when compared to women with subsequent pregnancies.

Table 1: Sialic levels in different groups

Sr. No.	Groups	No. of participants	Sialic acid levels
1	Primigravida	20	70.7±8.9
2	Post-partum	40	67.4±4.6
3	Gestational >1	20	64.5±5.3
4	Controls	20	56.7

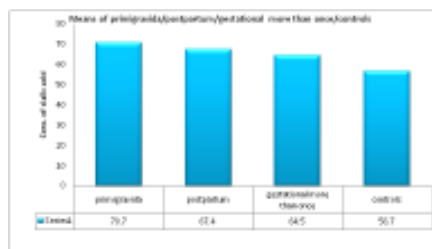


Figure 1: Graphical representation of sialic acid levels in different groups

CONCLUSIONS AND DISCUSSIONS

We were able to show that there were highly significant elevations in serum sialic acid during primigravida and subsequent pregnancies which persisted to 12 weeks postpartum, in comparison to non-pregnant women. We used a specific enzymatic assay to measure serum sialic acid and not the thiobarbituric acid or resorcinol assays that are colorimetric and can interfere with other carbohydrate moieties. The elevated level of serum sialic acid in primigravida and subsequent pregnancies establishes that sialic acid is indeed elevated in pregnancy. The possible role/various roles of elevated sialic acid in pregnancy need extensive research targeting specifically metabolic syndrome.

REFERENCES

1. B Wangl and J Brand-Miller., The role and potential of sialic acid in human nutrition., *European Journal of Clinical Nutrition* (2003) 57, 1351–1369.
2. Kazuyuki Sugahara Corresponding author contact information, Katsuya Sugimoto, Osamu Nomura, Toshiaki Usui., *Enzymatic assay of serum sialic acid.*, Volume 108, Issue 3, 22 December 1980, Pages 493–498.
3. Jarkko Romppanen / Eeva-Liisa Romppanen / Toivo Halonen / Matti Eskelinen / Kari Punnonen., *Reference Values of Serum Total Sialic Acid for Healthy Adult Subjects and Comparison of Two Different Calibrators for Quantitation of Total Sialic Acid in High Performance Anion-Exchange Chromatography with Pulsed Amperometric Detection.*, *Clinical Chemistry and Laboratory Medicine*. Volume 41, Issue 8, Pages 1095–1096.
4. Hangloo VK1, Kaul I, Zargar HU., *Serum sialic acid levels in healthy individuals: J Postgrad Med.* 1990 Jul; 36(3):140-2.

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