

A NOTE ON URIC ACID CONTENT IN BLOOD AND COLOSTRUM OF NORMAL AND TOXAEMIC PREGNANT MOTHERS

by

M. K. RAMANATHAN, M.Sc., M.B.B.S., A.R.I.C. (Lond.)*

R. RAJAN, B.Sc., M.B.B.S.**

and

S. N. MUKHERJI, M.B.B.S., D.G.O., M.O.***

It is well-known that blood uric acid concentration is increased in pre-eclampsia and eclampsia with no significant change in normal pregnancy. The raised levels seen in the above toxæmic conditions were considered to be due to diminished destruction of uric acid in liver which was based upon the observations of Stander and Cadden (1934) who did not find impairment of uric acid excretion. However, recently by precise renal function tests, Seitchik (1956) showed that there was an excessive reabsorption of urate by the renal tubules in the toxæmic conditions. Besides, by administering isotopic uric acid (labelled with N^{15}) to normal as well as toxæmic American women, Seitchik et al (1958) observed that in the latter group uric acid pool was enlarged with a reduction in urinary uric acid excretion.

In view of this they reported that the faulty renal function was the sole causative factor in urate accumulation, in acute toxæmia. However, they have not extended the above type of study to toxæmic women following parturition, to find out precisely the time when the kidneys return to normal, though the clinical impressions have been that following delivery with the fall of blood pressure and diuresis, patients return to normalcy. It is felt that a simple and indirect method of study would be to determine serially blood uric acid levels following parturition and it might be presumed that with the levels returning to normal the kidneys return to normal activity. Besides, since the uric acid pool was enlarged in toxæmic women, it is possible that with a defective kidney function a portion of excess of uric acid would find itself in colostrum. In view of the absence of any information on the above aspect, it was considered worthwhile to determine the uric acid content in sera and colostrum of apparently healthy normal pregnant and toxæmic mothers. The above determinations in about twenty normal and twenty toxæmic cases form the basis of the present report.

Departments of Biochemistry and Obstetrics & Gynaecology, Medical College, Pondicherry.

* *Reader in Biochemistry.*

** *Demonstrator in Biochemistry.*

*** *Reader in Obstetrics & Gynaecology.*

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Material and Methods

Venous blood samples were obtained from 25 apparently healthy mothers at full-term, admitted in the maternity hospital at Pondicherry for delivery. Following parturition, colostrum samples were obtained from 20 of the above 25 mothers. In this study colostrum refers to the secretion obtained from the mammary glands within one to five days following parturition. The samples were obtained by manual expression and were collected between 10 a.m. and 11 a.m. four hours after the last feed.

As regards toxæmic women blood samples were obtained from 18 patients (13 pre-eclampsia and 5 eclampsia). Following delivery, simultaneously when colostrum specimens were obtained blood samples were also withdrawn from the toxæmic women.

Analytical

Sera were separated immediately

and the estimations were done in the sera as well as in colostrum on the same day. Uric acid in serum was determined by the method of Brown (1945). In the case of colostrum, the method of precipitation of Erickson et al (1933) was followed to avoid any loss of uric acid which occurs during the precipitation of proteins. This was followed by the colorimetric procedure of Brown (*loc. cit.*).

Results and Discussion

The results are presented in Table 1. It will be observed that a mean value of 4.9 mg. per cent obtained in the serum of normal pregnant women was similar to the values reported elsewhere in literature for white women. However, Prabhavathi (1957) reported in normal pregnant women a mean value of 2.94 mg. per cent which was on the lower limit of normal. In toxæmic cases a mean value of 6.54 mg. per cent, which was in close agreement with the observations of Prabhavathi (*loc. cit.*) as well

TABLE
*Uric Acid in Colostrum and Sera of Normal Pregnancy
and Toxaemic Mothers*

	Serum uric acid in mg. percent		Serum uric acid nitrogen in mg.%		Colostrum uric acid in mg.%		Colostrum uric acid nitrogen in mg.%	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Apparently healthy pregnant women at full term	4.9	2.90- 6.00	1.63	0.97- 2.00	1.71	1.1 - 2.6	0.57	0.37- 0.87
Toxaemic mothers be- fore delivery	6.54	3.80- 9.30	2.18	1.27- 3.10	—	—	—	—
Toxaemic mothers after delivery during colostrum period	5.57	2.40- 8.40	1.86	0.80- 2.80	3.15	2.60- 3.80	1.05	0.87- 1.27

as with the figures reported for toxæmic American mothers, was obtained.

With regard to the uric acid content in colostrum a mean value of 1.71 mg. per cent was obtained in normal mothers. This is very low when compared to the figures reported by Erickson et al (1934) who obtained a mean value of 12.3 mg. per cent (4.1 mg. as nitrogen) in the colostrum of normal American mothers. This observation is rather interesting. However, unfortunately so far in various studies carried out on human lactation in India, no reports on the uric acid content in the colostrum, transitional or mature milk are available for purposes of comparison. More work on a large number of samples at different stages of lactation at different laboratories are needed before one can assess the significance of low uric acid observed in colostrum in the present investigation.

With regard to the uric acid content in blood in toxæmic women following parturition, a mean value of 5.57 mg. per cent was obtained during the 'colostral' period showing thereby that the levels had not yet returned to normal up to the fifth day following delivery, and continued to remain elevated. By the above observation one might be permitted to conclude that the defective kidney function as far as uric acid reabsorption or excretion was concerned, continued to operate, even though clinically the patients appeared normal. Besides, the uric acid in colostrum also showed an elevation in the above toxæmic mothers. A mean value of 3.15 mg. per cent was obtained which was nearly double the figure obtained in

normal cases. The raised level obtained in colostrum also indicates the "enlarged uric acid pool" already referred to by Seitchik et al (loc. cit.).

Summary

Uric acid in sera and in colostrum of normal pregnant and toxæmic mothers was determined and their significance discussed.

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