RELATIONS OF AGE, SEX, BODY WEIGHT, DIET AND URINARY UROPORPHYRIN EXCRETION IN 100 NORMAL PUNJABIS

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Summary

A quantitative assay of Urinary Uroporphyrin was done in 100 normal persons by spectrophotometric method of Rimington. Urinary uroporphyrin ranged from 0 – 22.71 ug/24 hours and the mean being 3.75 ug/24 hours with S.D. ± 3 95. Effect of age, sex, body weight and diet was studied on urinary uroporphyrin excretion. The relationship of these to the excretion of urinary uroporphyrin s discussed.

A quantitative estimation of uroporphyrin was done in 100 normal Punjabis of varying ages and both sexes. The aim of this study was to study the correlation between age, sex, body weight and the excretion of urinary uroporphyrin.

Material and Methods

A quantitative assay of urinary uroporphyrin was undertaken in 100 normal persons. Rimington's[1] method has been used, uroporphyrin being extracted in 5% Hcl using different solvents and determined spectrophotometrically.

Observations

A. Effect of Age

The table 1 shows that the mean uroporphyrin excretion for the age group 0–14, 15–40 and 41–70 was 2.26±2.35, 4.90±3.79 and 4.05±4.94 ug/24 hrs. The difference of mean between the age group 0–14 and 15–40 was statistically significant (tc value was more than the table value viz., 1.9599). The difference of mean between the age group 0–14 and the age group 41–70 was statistically insignificant (tc value was less than the table value viz. 1.9599). The difference of mean between age group 15–40 and the age group 41–70 was statistically insignificant (tc value was less than 1.9599).

B. Effect of Sex

The effect of sex on excretion of urinary uroporphyrin as observed in the present study is shown in Table 2.

Table No. 2 shows the normal values of urinary uroporphyrin excretion in 50 normal males and 50 normal females. The mean uroporphyrin excretion for female was 4.21±4.51 ug/24 hrs. The mean uroporphyrin excretion for males was 3.28±3.32 ug/24 hrs. The range of value for male and female was 0 to 12.74 and 0-22.71 ug/ 24 hrs, respectively. The mean uroporphyrin excretion in female was more than in the male. This difference was statistically insignificant (tc is less than 1.9599).

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TABLE 1

Showing the effect of age on urinary uroporphyrin excretion in ug/24 hrs. in normal persons

S. No.	Age group	No. of cases	Mean	Range	SD ±	SE ±
1.	0–14	33	2.26	0- 7.13	2.35	0.41
2.	15–40	34	4.90	0–12.74	3.79	0.66
3.	41–70	33	4.05	0–22.71	4.94	0.87

TABLE 2

Showing the effect of sex on urinary uroporphyrin excretion in ug/24 hours.

S. No.	Sex	No. of cases	Mean	Range	SD ±	SE ±
1.	Male	50	3.28	0–12.74	3.32	0.63
2.	Female	50	4.21	0–22.71	4.51	0.63

C. Effect of Body Weight

The study of table 3 shows that in normal subjects, the mean urinary uroporphyrin excretion in ug/24 hrs. was 1.16 in the weight group 41–60 and increased gradually upto 5.09 ug/24 hrs. in the weight group 121–140, and then decreased in the weight group 141–160. The mean value in the weight group 101–120 was also less than in weight group 81–100.

D. Effect of Diet

The effect of diet on urinary uroporphyrin excretion was also analysed in normal subjects.

Table 4 shows that the mean uroporphyrin excretion for non-vegetarian group was 4.50±4.41 ug/24 hrs. and for vegetarian group was 3.02±3.29 ug/24 hrs. The range of values for non-vegetarian and vegetarian were 0–22.71 and

TABLE 3

Showing the effect of weight on urinary uroporphyrin excretion in ug/24 hrs.

S. No.	Weight in lbs.	No. of cases	Mean	Range	SD ±	SE ±
1	0–20	2	0.71	—	—	—
2.	21–40	10	2.28	0–5.12	2.57	0.86
3.	41–60	10	1.16	0–3.79	1.57	0.52
4.	61–80	8	2.44	0–6.82	2.94	1.11
5.	81–100	23	4.17	0–14.13	3.91	0.83
6.	101–120	27	4.05	0–12.74	3.87	0.76
7.	121–140	18	5.09	0–22.71	5.18	1.33
8.	141–160	2	4.96	—	—	—

TABLE 4

Showing the effect of diet on urinary uroporphyrin excretion in ug/24 hrs.

S. No.	Vegetarian / Non-vegetarian	No. of cases	Mean	Range	SD ±	SE ±
1.	Non-vegetarian	50	4.50	0-22.71	4.41	0.62
2.	Vegetarian	50	3.02	0–9.91	3.29	0.46

0-9.91 ug/24 hrs. respectively. Since the calculated values (1.90) was less than the table value (1.9599), the difference of mean between the vegetarian and non-vegetarian group was found to be statistically insignificant.

Comments

There is a wide range of individual variations in the levels of uroporphyrin present in the urine. The following conclusions have been drawn from the present study.

1. The uroporphyrin excretion in 100 normal subjects ranged from 0-22.71 ug/24 hrs., the mean being 3.75 ug/24 hrs. with SD+3.95.

2. The difference of mean levels of uroporphyrin excretion was statistically significant between the age group 0–14 and 15–40. But the difference of mean between the age group 0–14 and 41–70 and also between the age group 15-40 and 41-70 was statistically insignificant.

The mean excretion of uroporphyrin in children was found to be lower than in the adults. Similar findings have been observed by Fokina[2] who reported that children eliminate less porphyrin in the urine than the adults. According to his observation, the levels of uroporphyrin excretion vary with age.

3. Uroporphyrin excretion/24 hours urine sample is more in females than in males. The difference of mean in both sexes was statistically insignificant. Our values were in contrast with those of El-Mofty, AM et al[3] who observed that the excretion of uroporphyrin/24 hrs. urine sample is more in males than females. The exact significance of this observation is not clear.

4. Our findings show a positive correlation between body weight and uroporphyrin excretion, this correlation being statistically significant. No reports are available in the literature which show any correlation between body weight and uroporphyrin excretion. However, Straight et al[4] and Hsia and Page[5] have reported that in the normal subjects, total urinary coproporphyrin excretion appeared to be proportional to body weight.

5. Effect of diet on the excretion of urinary uroporphyrin has not been reported so far. In our study, no statistically significant difference was observed between the vegetarians and non-vegetarians although the uroporphyrin excretion was higher in non-vegetarians than in vegetarians. May be the non-vegetarians included in the present study were not strictly non-vegetarians. The above observation required further elucidation by carrying out these studies in a still larger group of normal subjects and over a longer period of time.

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