

Urinary excretion of histamine and methylhistamine in testicular feminizing syndrome

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Summary: Histamine is implicated in several reproductive functions (2, 7). Correlation between histamine metabolism and sex hormones has been a matter of interest for many years. Urinary histamine excretion has been studied under various experimental conditions in different species. In man it was reported (4), that the urinary excretion of histamine and/or methylhistamine in women was correlated to the excretion of oestrogen. Very little is known about the condition in man with intersex.

The case reported here shows that histamine and methylhistamine excretion in urine in a patient with testicular feminizing syndrome is unaffected by castration.

Key words: Histamine; Sex hormones.

CASE REPORT AND METHODS

The patient was a 23 year old woman with testicular feminisation syndrome. She had a normal male chromosomal karyotype and negative sex chromatin. Surgery was performed and a gonad in the pelvic cavity was removed. Microscopic examination of the removed gonad showed the histological appearance of a testis with vasa differentia and epididymis.

The urine was collected for 24 hours before and four days after gonadectomy at a standardized diet as described by Granerus (3). Immediately after each voiding the urine was collected in clean glass bottles containing 100 ml of 1 mol/l hydrochloric acid. The urinary excretion of free histamine was determined by bioassay on the isolated guinea-pig ileum as described by

Wetterqvist and White (10). Methylhistamine was determined by reaction with 2,4-di-nitrofluorobenzene, followed by separation of the reaction products by thin layer chromatography and spectrophotometric measurements of eluates from the chromatogram. The method has been described by White (11).

RESULTS

	Gonadectomy	
	before	after
Histamine base in ug/24 hours	20	19
Methylhistamine base in ug/24 hours	181	279
Serum FSH	6.3 IU/L	15 IU/L
Serum LH	3.5 IU/L	7.8 IU/L
Oestrogen per 24 hours	61 nmol	120 nmol
Plasma testosterone	15 nmol/L	5.5 nmol/L

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DISCUSSION

Although there is no evidence of sex difference in urinary excretion of histamine in man's urine, it was reported^(4,5), that urinary excretion of histamine and/or methylhistamine increases in amenorrhoeic women in whom an increase in the endogenous oestrogen levels had been induced by administration of gonadotrophic hormones. It is well known that there are four sources of histamine: mast cells, basophile, platelets and endothelial cells^(1,8). Little is known about the role of basophile, platelets and endothelial cells in ovarian and testicular functions. In our patient there was no difference in the urinary excretion of histamine and methylhistamine before and after castration in spite of the increasing values of serum FSH, serum LH and oestrogen after castration. We can also note that the decreasing of plasma testosterone level after castration did not influence the excretion of either histamine or methylhistamine.

Studies of the urinary excretion of histamine in the rat suggested that androgen enhances the catabolism of histamine⁽⁹⁾. Castration results in a marked elevation of urinary free histamine levels, approaching those seen in the female, and these

levels can be restored to normal by the administration of testosterone⁽⁶⁾.

The findings in our patient may illustrate differences in histamine metabolism between different species.

BIBLIOGRAPHY

- 1) Beaven M. A.: *Monographs of Allergy*, 13, 1, 1978.
- 2) Dey S. L., Villanueva C., Chien S. M., Christ R. D.: *J. Reprod. Fertil.*, 53, 23, 1978.
- 3) Granerus G.: *Scand. J. Clin. Lab. Invest.*, 22 suppl., 104, 59, 1969.
- 4) Green J. P., Fram D. H., Kase N.: *Nature (London)*, 204, 1165, 1964.
- 5) Jonassen F., Granerus G., Wetterqvist H.: *Acta Obst. Gyn. Scand.*, 55, 297, 1976.
- 6) Kim K. S.: *Nature (London)*, 191, 1368, 1961.
- 7) Kobayashi Y., Wright K. H., Santulli R., Kitai H., Wallach E.: *Biol. Reprod.*, 28, 385, 1983.
- 8) Krishna A., Beessley K., Terranova P. F.: *Journal of Endocrinology*, 120, 363, 1988.
- 9) Westling H., Wetterqvist H.: *Brit. J. Pharmacol.*, 19, 64, 1962.
- 10) Wetterqvist H., White T.: *Scand. J. Clin. Lab. Invest.*, 25, 325, 1970.
- 11) White T.: *Brit. J. Pharmacol.*, 26, 494, 1966.

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