Histamine Levels in Health and Disease

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Histamine is a biologically active amine compound formed in the body by removal of an acid group from histidine. It is most often associated with Type 1 IgE hypersensitive reactions.

When released from basophils and tissue mast cells, the biological effects of histamine include increased vascular permeability of small venules; contraction of bronchial and other smooth muscle; increased gastric, nasal, and lacrimal secretions. A function not normally associated with histamine is the role of neurotransmitter in the brain.[1,2] Elevated histamine levels may also be related to certain forms of headache and schizophrenia.[3,4,5] A list of the characteristics of patients with low or high blood histamine levels are shown in Table 1 (p.237).

The first accurate and convenient method for measuring blood histamine levels was first described by Dr. Carl C. Pfeiffer in 1968. This fluorescent method is performed on two milliliters of venous blood mixed with five milliliters of 10% trichloracetic acid. Histamine and the polyamines, spermidine and spermine, are separated by ion-exchange techniques using cation cellulose. The solution is reacted with a chemical to induce fluorescence, which is then read in a spectrofluorometer. The reference range for histamine by the method used at the BioCenter Laboratory is 25 to 65 ng/mL.[6,7]

Clinical Cases

Laboratory records were reviewed for patients having a blood histamine level requested by one of The Center's physicians. Fifty-five patients were randomly selected from the records. The histamine level and physician diagnosis were then compared. If a urine pyrrole level was also requested, it was included in the data. Elevated pyrroles are said to be associated with physiological and/or psychological stress.[8] Table 2 (p.237) lists patients with elevated histamine, diagnosis and pyrrole levels. Table 3 (p.238) lists patients with low histamine, diagnosis and pyrroles levels. Table 4 (p.238-39) lists patients with normal histamine, diagnosis and pyrrole levels.

As Table 2 shows, eight patients out of the 55 examined (14.5%), had high histamine levels. All patients had one or more of the symptoms of histadelia listed in Table 1. Three of the patients also had high urine pyrrole levels. Note the histamine and pyrrole level in the 49 year old male with OCD. He has had obsessive compulsive disorder for many years. During his visits at The Center, blood histamine and urine pyrroles were measured. The results obtained were as follows:

August 18, 1992 -histamine 83 ng/dL, pyrroles 20 ug/dL

June 16, 1994 -histamine 117 ng/dL, pyrroles 32 ug/dL

January 17, 1997-histamine 107 ng/dL, pyrroles 33 ug/dL.

This patient continues to have significant problems with his OCD behavior. It will be interesting to follow this patient and to see if there is any correlation between the levels of histamine and pyrroles with any improvement in the patient's condition. The histamine levels of 117 and 107 ng/mL are among the highest seen in our laboratory. As Table 3 shows, five out of 55 patients (9.0%, and all females) had low histamine levels. Four of the patients also showed an elevated pyrrole level. These patients had one or more symptoms of histapenia.

Forty two patients (Table 4) had normal histamine levels. Some of these pa-

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Table 1. Characteristics of blood histamine levels

Low blood histamine (histapenia)	High blood histamine (histadelia)
Paranoia	Obsession and compulsion
Overstimulation: low productivity	Overstimulation, with productivity
Excessive need for sleep	Less than average need for sleep
High tolerance for pain	Low tolerance for pain
Low tolerance for drugs	Low tolerance for drugs
Low libido; slow sexual response	High libido; fast sexual response
Easy frustration; mild depression	Exaggerated depression
Few allergic reactions	Frequent allergic reactions
Non-addictive nature	High addictive potential
Slow metabolizer of food	Rapid metabolizer of food
Tension headaches	Migraine-type headaches
Cry easily	Has chronic muscle-spasm syndrome
Steatopygous body type-hirsute	Tend to be thin-little body hair

Table 2. Comparison of diagnosis with elevated histamine and urine pyrrole levels

Age/Sex	Diagnosis	Blood Histamine Normal= 25-65ng/mL	Urine Pyrrole Normal= < 20ug/dL
42/M	bipolar, organic brain syndrome	76	25
30/F	headache, PMS, back pain, easy bruising	25	
49/M	obsessive compulsive disorder	107*	33
47/M	headache, allergies	77	7
50/F	depression, headache, anxiety, back pain, easy bruising	65	17
51/F	headaches, obesity, Candiasis	70	0
51/M	migraine headache, memory loss diabetes	71	18
39/F	depression, back pain, PMS, arthritis	68	3

tients also showed symptoms of histapenia and/or histadelia. It is interesting to note that 21 (50%) of these patients had elevated urinary pyrroles. Patients with elevated pyrroles (Table 2, 3, and 4) confirms the results published previously by the authors which showed that elevated urinary pyrroles serve as a good indicator and diagnostic aid for patients suffering physiological and psychological stress.[8]

The BioCenter Laboratory serves as a national reference laboratory and performs histamines and pyrroles on specimens from many different clinical facilities

Table 3. Comparison of diagnosis with low histamine and urine pyrrole levels

Age/Sex	Diagnosis	Blood Histamine Normal= 25-65ng/mL	Urine Pyrrole Normal= < 20ug/dL
42/F	depression, anxiety, headache, allergies	25	14
41/F	depression, headaches, CFS, obesity	23	5
30/F	allergies	22	4
38/F	insomnia, irritable bowel syndrome, fibromyalgia	19	93
49/F	headaches, gastritis, PMS	17	32

Table 4. Comparison of diagnosis, normal histamine, and urine pyrrole levels

Age/Sex	Diagnosis	Blood Histamine Normal= 25-65ng/mL	Urine Pyrrole Normal= <20ug/dL
59/F	hair loss, constipation	58	5
	allergies, CFS, sinusitis, hypertension	41	NA
48/M	back pain, edema	53	21*
31/F	headache, gastritis, PMS	42	11
51/M	depression, anxiety, fatigue, tinnitus, muscle spasms, arrhythmias	43	5
27/F	depression, insomnia	37	0
34/F	diabetes	32	26*
48/F	migraine headache	33	30*
72/M	depression, leukopenia, hypothyroid	61	36*
43/F	depression, headache, recurrent cough	63	21*
50/F	insomnia, CFS, myositis	35	20*
43/F	fatigue, constipation, hyperlipidemia	55	13
65/M	allergies, myalgia, hypertension	46	31*
61/F	bipolar, headache, edema	55	24*
41/M	bipolar, allergies, constipation	44	2
51/F	allergies, sinusitis, CFS, hypothyroid	31	22*
70/M	depression, Parkinson's disease	49	20*
29/M	bipolar, depression, CFS	52	18
34/F	depression, schizophrenia, headache, allergies, sinusitis, easy bruising	36	15

cont'd

Table 4. (cont'd) Comparison of diagnosis, normal histamine, and urine pyrrole levels

Age/Sex	Diagnosis	Blood Histamine Normal= 25-65ng/mL	Urine Pyrrole Normal= <20ug/dL
37/F	headache, CFS, insomnia, easy bruising	47	26*
40/F	headache, insomnia, acne, PMS	59	28*
52/F	allergies, dermatitis, arthritis, back pain	61	39*
28/F	depression, fatigue, edema	53	35*
45/F	headache, insomnia, dermatitis, hypertension, fibromyalgia	45	22*
21/F	headache, fatigue, acne, easy bruising	54	6
42/M	bipolar, organic brain syndrome	31	NA
37/M	depression, memory loss, easy bruising	45	19
49/M	depression, anxiety, tachycardia, dermatitis	48	9
15/F	headaches	29	4
15/F	anxiety, fatigue, asthma	39	22*
13/M	Down Syndrome, alopecia	45	32*
66/M	fatigue, hypertension	34	22*
17/F	easy bruising, hair loss, dermatitis, acne	39	6
66/F	easy bruising, migraine, anemia	58	31*
51/M	depression, headaches, hearing loss	54	56*
48/M	headache, memory loss, allergies	48	2
73/F	depression, anxiety, migraine, easy bruising, hypertension	34	7
43/M	allergies, tinnitus, easy bruising, obesity	47	9
29/F	headache, IBS, PMS	30	151*
51/F	depression, insomnia, allergies, fatigue	62	3
40/F	anxiety, CSF, Epstein Barr, gastritis	43	19
60/M	depression	37	16

*= elevated pyrroles

across the United States and Canada. In reviewing results from 50 blood histamines and urine pyrroles received from one clinical facility, two patients had low histamine levels while seven had high histamines levels. Eleven patients (22%) had elevated urine pyrroles. According to the director of the facility (an alcohol dependency nutrition treatment center), the information received from urine pyrrole levels is helpful in treating their patients.[9,10]

It must be noted that patients seen at The Center are chronically ill. Many of them have been seen by two or more physicians in the past and still present with a chronic illness. The protocol used at The Center include many tests not normally performed in the usual clinical laboratory. These "unusual" tests often allow the physicians at the Center to diagnose and successfully treat these patients. Blood histamine and urine pyrrole are examples of these tests.

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