Lab Dept: Urine/Stool

Test Name: N-METHYLHISTAMINE, 24 HR URINE

General Information

Lab Order Codes:	NMHIN
Synonyms:	N/A
CPT Codes:	82542 – Column chromatography, non-drug, not elsewhere specified, qualitative or quantitative, each specimen
Test Includes:	N-methylhistamine measured in mcg/g creatinine and Creatinine concentration reported in mg/dL and mg/24 h.

Logistics

Test Indications:	Screening for and monitoring of mastocytosis and disorders of systemic mast-cell activation, such as anaphylaxis and other forms of severe system allergic reactions. Monitoring therapeutic progress in conditions that are associated with secondary, localized, low-grade persistent, mast-cell proliferation and activation such as interstitial cystitis.
Lab Testing Sections:	Urine/Stool - Sendouts
Referred to:	Mayo Clinic Laboratories (Mayo Test: NMH24)
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Daily, 24 hours
Turnaround Time:	3 – 7 days
Special Instructions:	See Patient Preparation

Specimen

Specimen Type:	Urine, 24 hour specimen
Container:	24 hr collection container, no preservatives
Draw Volume:	5 mL (Minimum: 3 mL) urine

Processed Volume: Same as Draw Volume

Collection: 24 hour urine collection

Special Processing: Lab Staff: Mix the urine specimen well. Measure and document the total volume of the collection.

Remove the desired aliquot and put in a plastic, 5 mL urine tube.
Store and ship at refrigerated temperatures.

Patient Preparation: Note: Individuals who are taking monoamine oxidase inhibitors (MAOI's) or aminoguanidine would have increased N-methylhistamine (NMH) results, which would be uninterpretable.

Sample Rejection: Mislabled or unlabeled specimens

Interpretive

Reference Range:

Age:	Range:
0 – 5 years	120 – 510 mcg/g creatinine
6-16 years	70 – 330 mcg/g creatinine
>16 years	39 – 200 mcg/g creatinine

Interpretation: Increased concentrations of urinary N-methylhistamine (NMH) are consistent with urticaria pigmentosa (UP), systemic mastocytosis, or mast-cell activation. Because of its longer half-life, urinary NMH measurements have superior sensitivity and specificity than histamine, the parent compound. However, not all patients with systemic mastocytosis or anaphylaxis will exhibit concentrations outside the reference range and healthy individuals may occasionally exhibit values just above the upper limit of normal.

The extent of the observed increase in urinary NMH excretion is correlated with the magnitude of mast-cell proliferation and activation, UP patients, or patients with other localized mast-cell proliferation and activation, show usually only mild elevations, while systemic mastocytosis and anaphylaxis tend to be associated with more significant

Critical Values: N/A

Limitations:

While an average North American diet has no effect on urinary N-methylhistamine NMH levels, mild elevations (around 30%) may be observed on very histamine-rich diets. This problem is more pronounced if spot-urine specimen is collected following a histamine-rich meal.

NMH levels may be depressed in individuals who have a polymorphism in the histamine-N-methyl transferase gene, which encodes the enzyme that catalyzes NMH formation. This polymorphism results in an amino acid change that decreases the rate of NMH synthesis.

When N-acetylcysteine is administered at levels sufficient to act as an antidotes for the treatment of acetaminophen overdose, it may lead to falsely decreased creatinine results.

Methodology:

NMH: Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)
NCTU: Enzymatic Colorimetric Assay

References:

Mayo Clinical Laboratories (April 2020)