

## GLYCINE TOXICITY

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<b>Co-existing disease:</b>	Glycine Toxicity

### Glycine

- Glycine toxicity is typically seen in the settings of transurethral resection of the prostate (TURP) or hysteroscopy.
- Irrigating solutions for TURP include distilled water, glycine, sorbitol & mannitol.
- Glycine is prepared as a 1.5% solution and is hypo-osmolar at an osmolality of 200 (mOsm/Liter).
- Glycine is a nonessential amino acid that is normally present in circulation and is also an inhibitory neurotransmitter in the CNS.
- Glycine is metabolized in the liver into ammonia and glyoxylic acid.

### TURP Syndrome

- Also known as *water intoxication syndrome*; a general term used to describe a wide range of neurologic and cardiopulmonary symptoms that occur when irrigating fluid is absorbed during TURP procedures. This syndrome is unlikely when less than 1-1.5L of irrigant is absorbed and becomes progressively more likely above 2L of absorbed irrigant.
- The principal components include **respiratory distress, dilution of electrolytes and proteins and solution-specific symptoms**.
- The clinical manifestations range from mild (confusion, restlessness and shortness of breath) to severe (seizures, coma, hypertension, ventricular tachycardia/fibrillation or cardiovascular collapse).

### Glycine Toxicity

- In addition to the symptoms of TURP syndrome, symptoms related to a specific irrigating solution may further confuse and complicate the clinical picture.
- Excessive use of glycine can lead to nausea, malaise, vomiting, mild confusion, stupor and coma, severe disorientation and blindness, which correlate with the amount of glycine absorbed. Glycine metabolism may lead to **hyperammonemia**, with possible encephalopathic changes. The **transient postoperative visual impairment** is thought to be secondary to glycine's inhibitory action in the CNS or perhaps to CNS edema. **Hyperoxaluria** places the patient at risk for calcium oxalate deposition in the kidneys.

### References

- Clinical Anesthesia, 3<sup>rd</sup> Edition; Barash, Cullen and Stoelting; Lippincott Williams & Wilkens, 1997.
- Clinical Anesthesiology, 2<sup>nd</sup> Edition; Morgan and Mikhail; Lange, 1996.

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