TABLE 7. THYROID STORM: DRUGS AND DOSES

Drug	*Dosing*	*Comment*
Propylthiouracil[a]	500–1000 mg load, then 250 mg every 4 hours	Blocks new hormone synthesis Blocks T_4-to-T_3 conversion
Methimazole	60–80 mg/d	Blocks new hormone synthesis
Propranolol	60–80 mg every 4 hours	Consider invasive monitoring in congestive heart failure patients Blocks T_4-to-T_3 conversion in high doses Alternate drug: esmolol infusion
Iodine (saturated solution of potassium iodide)	5 drops (0.25 mL or 250 mg) orally every 6 hours	Do not start until 1 hour after antithyroid drugs Blocks new hormone synthesis Blocks thyroid hormone release Alternative drug: Lugol's solution
Hydrocortisone	300 mg intravenous load, then 100 mg every 8 hours	May block T_4-to-T_3 conversion Prophylaxis against relative adrenal insufficiency Alternative drug: dexamethasone

[a]May be given intravenously.

(120). Unfortunately, the oral radiographic contrast agents ipodate and iopanoic acid are not currently available in many countries.

[I] Is there a role for iodine as primary therapy in the treatment of GD?

Prior to the introduction of ATDs, iodine was commonly reported to ameliorate the hyperthyroidism associated with GD (236,237). Iodine acutely lowers thyroid hormone concentrations by reducing hormone secretion (238,239), and inhibits its own organification (the Wolff–Chaikoff effect) (240). However, reports of escape from these beneficial effects of iodine (241) as well as reports of iodine-induced hyperthyroidism in patients with nodular goiter (242) discouraged the use of iodine in GD. Recent studies have suggested a potential role for iodine in patients who have had adverse reactions to ATD and who also have a contraindication or aversion to RAI or surgery (243,244).

■ **RECOMMENDATION 36**

Potassium iodide may be of benefit in select patients with hyperthyroidism due to GD, those who have adverse reactions to ATDs, and those who have a contraindication or aversion to RAI therapy (or aversion to repeat RAI therapy) or surgery. Treatment may be more suitable for patients with mild hyperthyroidism or a prior history of RAI therapy.

No recommendation; insufficient evidence to assess benefits or risks.

Among 44 Japanese patients who had adverse reactions to ATD and who were treated with KI alone, 66% were well controlled for an average of 18 years (range 9–28 years), and 39% achieved a remission after 7 years (range 2–23 years) (243). Among the responders, the doses used were between 13 and 100 mg and were adjusted depending upon biochemical response. Among 15 nonresponders, 11 (25% of all patients) escaped the inhibitory effects of iodine and four patients did not respond at all to KI. None of the patients had side effects. Initial free T_4 concentration and goiter size did not predict a response to therapy. Among 20 Japanese patients with mild hyperthyroidism initially treated with KI alone and matched using propensity score analysis with patients treated with MMI alone, 85% of the patients treated with KI alone had normal thyroid function at 6 months and 1 year, comparable to that of the matched controls treated with MMI (244). Most patients were treated with 50 mg KI daily.

The inhibitory effects of iodine are greater in patients with a prior history of RAI exposure (245) suggesting a role for KI in patients who remain hyperthyroid after one dose of RAI and prefer to avoid a second dose. The use of KI prior to thyroidectomy for GD is discussed in Section [F1], the use of KI as adjunctive therapy following RAI is discussed in Section [D1], the use of KI in combination with MMI for treating GD is discussed in Section [E1], and the use of KI in hyperthyroidism complicating pregnancy is discussed in Section [T].

[J] How should overt hyperthyroidism due to TMNG or TA be managed?

■ **RECOMMENDATION 37**

We suggest that patients with overtly TMNG or TA be treated with RAI therapy or thyroidectomy. On occasion, long-term, low-dose treatment with MMI may be appropriate.

Weak recommendation, moderate-quality evidence.

Two effective and relatively safe definitive treatment options exist for TMNG and TA: RAI therapy and thyroid surgery. The decision regarding treatment should take into consideration several clinical and demographic factors as well as patient preference. The goal of therapy is the rapid and durable elimination of the hyperthyroid state.