



# Novel Classification of Painless Thyroiditis Including Potassium Iodide-Induced Painless Thyroiditis

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## Keywords

Painless thyroiditis; Potassium iodide

## Editorial

Painless thyroiditis is characterized by spontaneous resolving thyrotoxicosis through hypothyroid stage in approximately 60% of them and the remaining 40% without hypothyroid stage [1]. Different from Graves' disease, Tc-99m 20 minutes uptake is reduced to less than 0.80% and vascularity index, which is measured with power Doppler echography, is not elevated unlike Graves' disease (>80%) [2], and of 222 patients with painless thyroiditis, both M22-TRAb and TSAb (EIA) were not detected in 89.2% (n=198), TSAb (EIA) alone positive in 10.4% (n=23) and both TRAbs positive in one case [2-4]. The pathogenesis relevant to painless thyroiditis has become multifactorial, because many new drugs have been found to induce painless thyroiditis. Recently, we described an interesting case report of gestational painless thyroiditis [1,4]. Furthermore, we experienced 1 male and 11 female patients with Graves' disease aged 21 years to 56 years developed painless thyroiditis during treatment with potassium iodide for Graves' disease. All 12 patients discontinued antithyroid drugs because of their side effects and switched to potassium iodide. The diagnosis of painless thyroiditis was made based on decreased uptake of Tc-99m and spontaneous recovery of thyroid function described above. At the time of painless thyroiditis, FT3 and FT4 levels were elevated to  $9.43 \pm 5.16$  pg/mL (range 4.50 to 21.69 pg/mL) (normal, 2.00 to 4.40 pg/mL) and  $3.47 \pm 1.48$  ng/dL (range 2.04 to 6.63 ng/dL) (normal, 0.80 to 1.90 ng/dL), respectively. Of 12 patients with potassium iodide-induced painless thyroiditis, 11 patients were negative for M22-TRAb and in one case M22-TRAb was 2.4 IU/L, just above normal upper limit. Taken together, painless thyroiditis is stratified into 3 groups, as shown in Table 1. Sporadic painless thyroiditis consisted of sporadic painless thyroiditis unrelated to pregnancy, postpartum thyroiditis and gestational thyroiditis. The second group of painless thyroiditis is induced by receiving therapy including immunomodulator, GnRH analogues, tyrosine kinase inhibitor, immune checkpoint inhibitor and other drugs such as lithium, amiodarone and potassium iodide which is first reported in the present paper. The third group comprised painless thyroiditis due to mechanical destruction such as trauma, external radiation, and massage and post <sup>131</sup>I therapy for Graves' disease.

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Table 1: Novel classification of painless thyroiditis.

### Sporadic Painless Thyroiditis

1. Unrelated to pregnancy
  - a) Autoimmune (TgAb and/or TPOAb positive)
  - b) Non-autoimmune (TgAb and TPOAb negative)
2. Postpartum thyroiditis
3. Gestational thyroiditis

### Drug Induced Painless Thyroiditis

1. Immunomodulator (interferon alpha, interleukin 2, etc)
2. GnRH analogues( Leuprorelin, Goserelin)
3. Tyrosine Kinase Inhibitor (Sunitinib, Sorafenib)
4. Immune checkpoint inhibitor (Nivolumab, Pembrolizumab, Ipilimumab)
5. Others (Lithium, Amiodarone, Potassium Iodide)

### Others

Mechanical destruction-induced painless thyroiditis such as external radiation, trauma, massage, post-131I therapy for Graves' disease

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