Treatment of Low Risk Differentiated Thyroid Cancer : RAI or Not?

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The use of radioactive iodine (I-131) for treatment of thyroid carcinoma has a long history of almost 60 years. Most of the radiation dose of I-131 is delivered by beta-ray, which does not penetrate deep in tissues, so large amount of I-131 can be administered for the therapy without severe damage to the normal surrounding tissues. Main purpose of I-131 treatment in patients with differentiated thyroid carcinoma is for ablation of residual thyroid after thyroid resection or for the treatment of recurred or metastasis. The use of I-131 has been a mainstay of therapy for thyroid cancer utill now.

However, there was no consensus of use of I-131 in low risk group of thyroid cancer. Management of low risk thyroid cancer should be guided by the anticipated behavior of the tumor. There is no consensus regarding their optimal management, although there are steadily increasing incidence of low risk thyroid cancer reported. I-131 remnant ablation is being used in patients with differentiated thyroid cancer, postoperaively. Its goals are to destroy residual thyroid tissue, decrease the risk for recurrent locoregional disease, and facilitate long-term surveillance with whole body iodine scan and stimulated thyroglobulin measurements. Despite the generally favorable prognosis of thyroid cancer, even in the micropapillary thyroid cnacer, as many as 50% of them are invasive beyond the thyroid capsule, up to 64% have node metastases, and about 43% are multifocal. It is also reported that the rate of locoregional and distant metastasis are as high as 5.9% and 1.5%, respectively. The American Thyroid Association (ATA) recommends I-131 remnant ablation for all patients with TNM stage III and IV and all patients with stage II cancer who are younger than 45 years. The ATA also recommends I-131 ablation for most patients with Stage II cancer who are 45 years or older and selected patients with stage I cancer, especially those with any of the followings : multifocal tumor, nodal metastasis, extrathyroidal extension, vascular invasion, and/or more aggressive histologies. The rationale is that a large number of retrospective studies reported significant reduction in disease recurrence and cause-specific mortality, while other reports showed no such benefit, at least among most patients with papillary thyroid cancer, who are at the lowest risk for mortality. However, no prospective studies address this issue. We will review the recent reports and the debate in the radioiodine therapy in patients with differentiated thyroid cancer of low risk group.