Long-term follow-up results of benign nodular goiter in a rural district of east Japan

T. Kunori, N. Nemoto, S. Kawaguchi & F. Shinya
Dept. Surgery, Iwaki-kyoritsu Hospital, Japan

Results
A. Follow-up FNA (N=1,051) was performed once (61%), twice (22%), 3 times (8%) or more (9%). Most patients (69%) received the second FNA within 3 years. Diagnostic accuracy was 98% (as shown below).

B. Morphological changes of solitary nodules:
1) Volumes (VOL) of solitary nodules (n=531) increased over 120% of initial VOL in 30% of patients, whereas it decreased to less than 80% in 32% of patients.
2) Cystic changes were later observed in 10% of solid nodules (n=89) and formed cysts with a thin wall in 1% of patients.

C. Tg levels: Tg levels remained stable during 5 years (n=100). The level, however, tended to increase after 10 years of follow-up period.

D. Clinical outcomes: 20 patients (3.7%) underwent surgery after 2 years, 4 for cancer, 16 for cosmetic problems or rapid enlargement. A patient with cancer did not receive any follow-up examination for 4 years. Anaplastic carcinoma developed in a patient (5 years of follow-up) and died 4 months after the surgery. A patient aged 88 died of esophageal cancer after 6 months (6 years of follow-up).

Discussion
New patients with NOD are decreasing in our hospital. NPP events seem to have had an apparent effect. Diagnostic skills (e.g., US) detect smaller nodules than before. FNA, however, is technically difficult in small nodules and careful follow-up is necessary.

Thyroid nodules grow slowly. A third of nodules shrink after years of observation, and this phenomenon occurs more frequently in smaller nodules.

FNA limits the indication of surgery only to cancer, or for cosmetic problems. Bulky cystic lesions are generally treated by percutaneous ethanol injection therapy.

Late surgery (>2 years) was performed in 3.7% of patients. The treatment seemed to be reasonable. However, there were 2 deaths within 6 months. The results suggest that some patients have latent follicular malignancies and that surgery may trigger disease progression. Additional surgery is not always necessary.

The proper period for follow-up is unknown. We have no experience with very late (>10 years) diagnosis of cancer. Once diagnosed as benign, 2-3 FNAs, referring patients to home doctors may be warranted.

Conclusions
NOD was safe for life. A third of nodules shrank and a tenth formed cysts. Follow-up secures patients from cancer. Late surgery, although rare, may have a risk to induce unexpected malignancies. NOD patients should be spared unnecessary surgery.

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