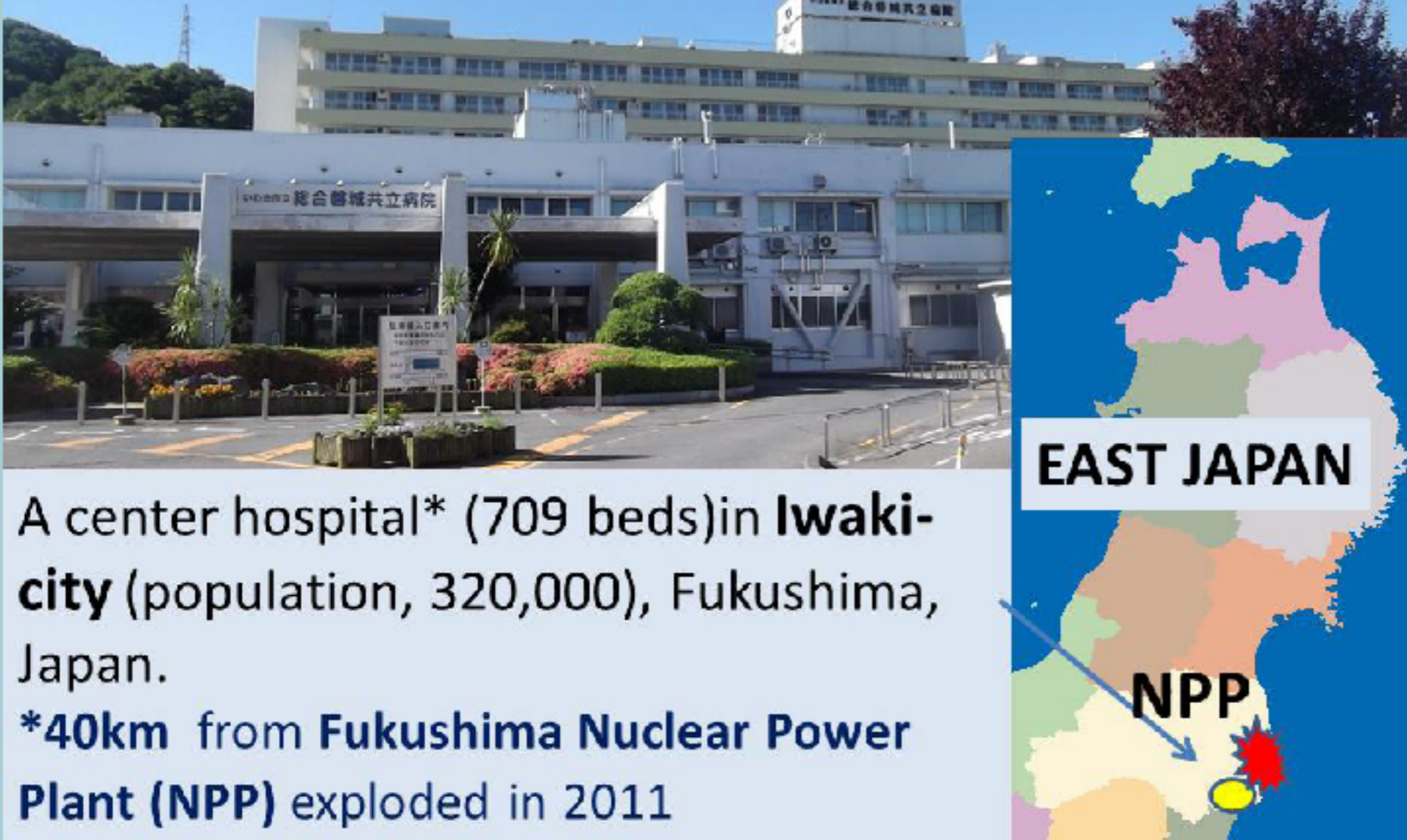


Long-term follow-up results of benign nodular goiter in a rural district of east Japan

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A center hospital* (709 beds) in Iwaki-city (population, 320,000), Fukushima, Japan.
*40km from Fukushima Nuclear Power Plant (NPP) exploded in 2011

Introduction

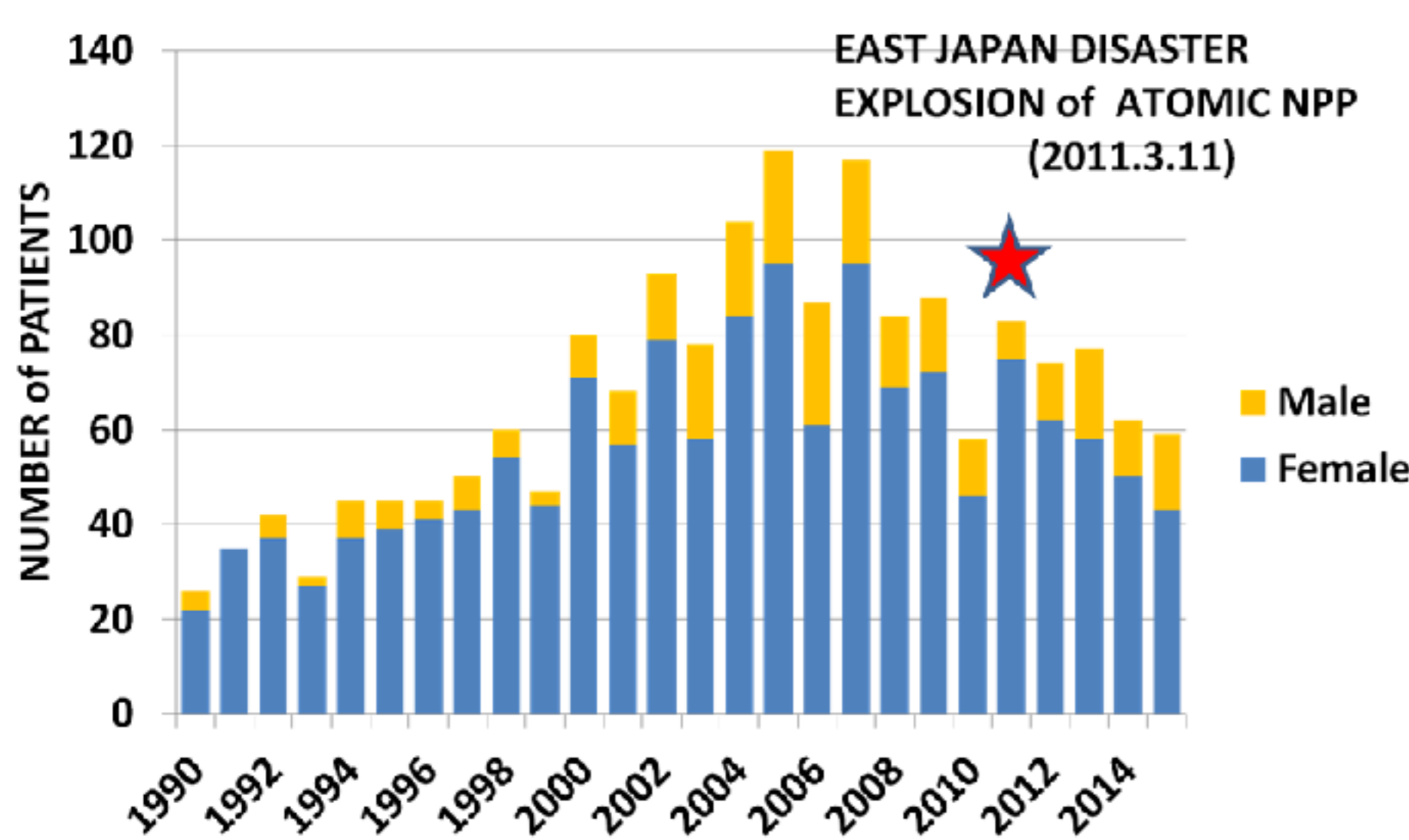
Thyroid screening, by the nuclear power plant (NPP) events, increased the number of patients with nodular goiter (NOD). Patients are, if confirmed benign, referred to home doctors or followed up for years. The long-term outcomes, however, are not always clear. We reviewed patients' records to see the follow-up results.

Patients and methods

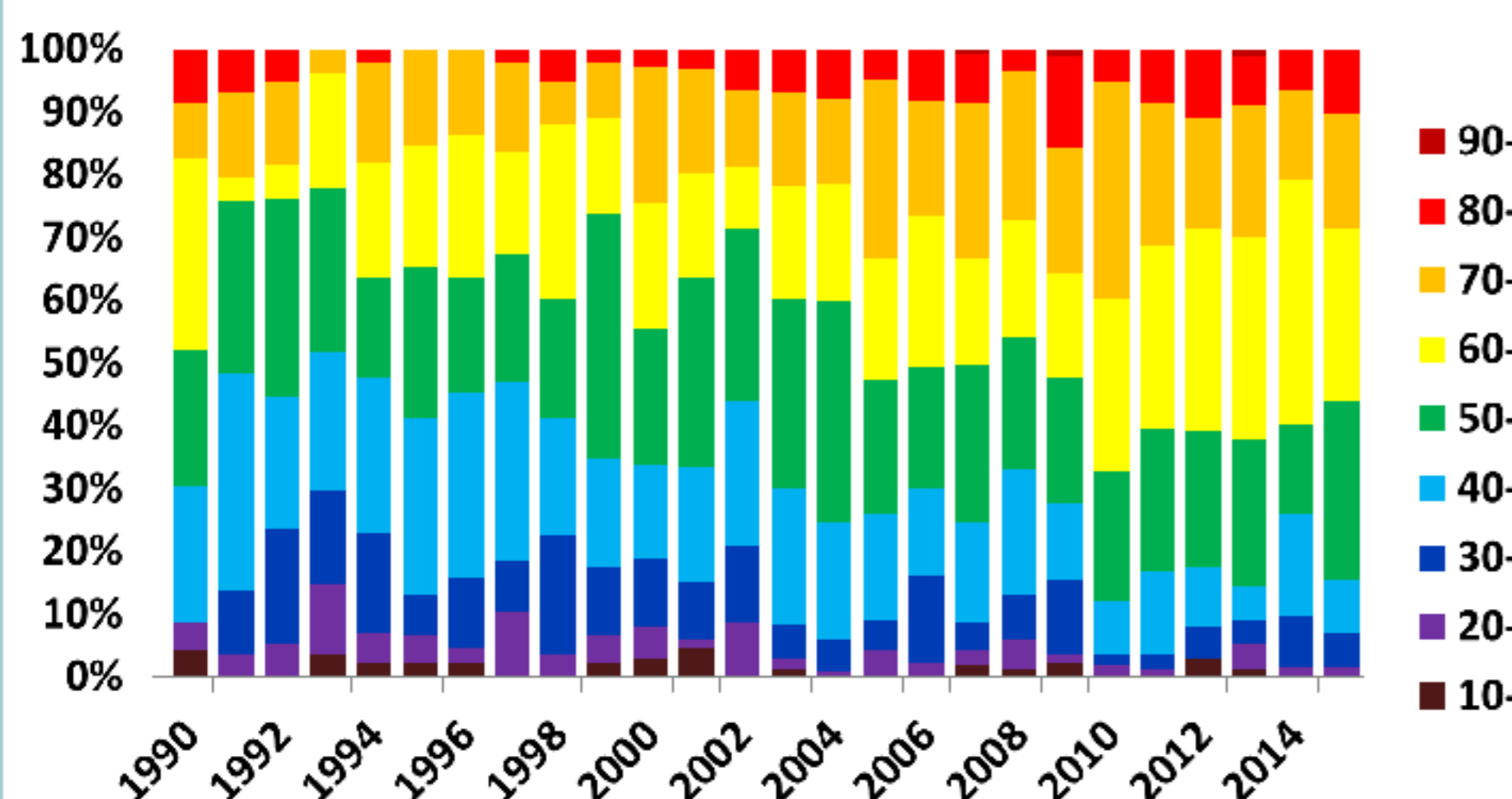
NOD was diagnosed in 1,819 patients (1990-2015); Age, 56.6 ± 15.4 (15-93, female N=1,506, 83%), 60.2 ± 14.7 (16-96, male N=313, 17%). 102 patients (6%) were treated by surgery. Rest of them returned to home doctors (69%) or continued to visit our clinic (522 patients, 31%).

Follow-up examination was performed by ultrasonography (US), measurement of serum thyroglobulin (Tg), or, if necessary, fine needle aspiration cytology (FNA). Mean follow-up period was 3.5 years (median 1.8 years; longest 22 years). The examination was repeated 3.9 times (mean; 2-38) in each patient.

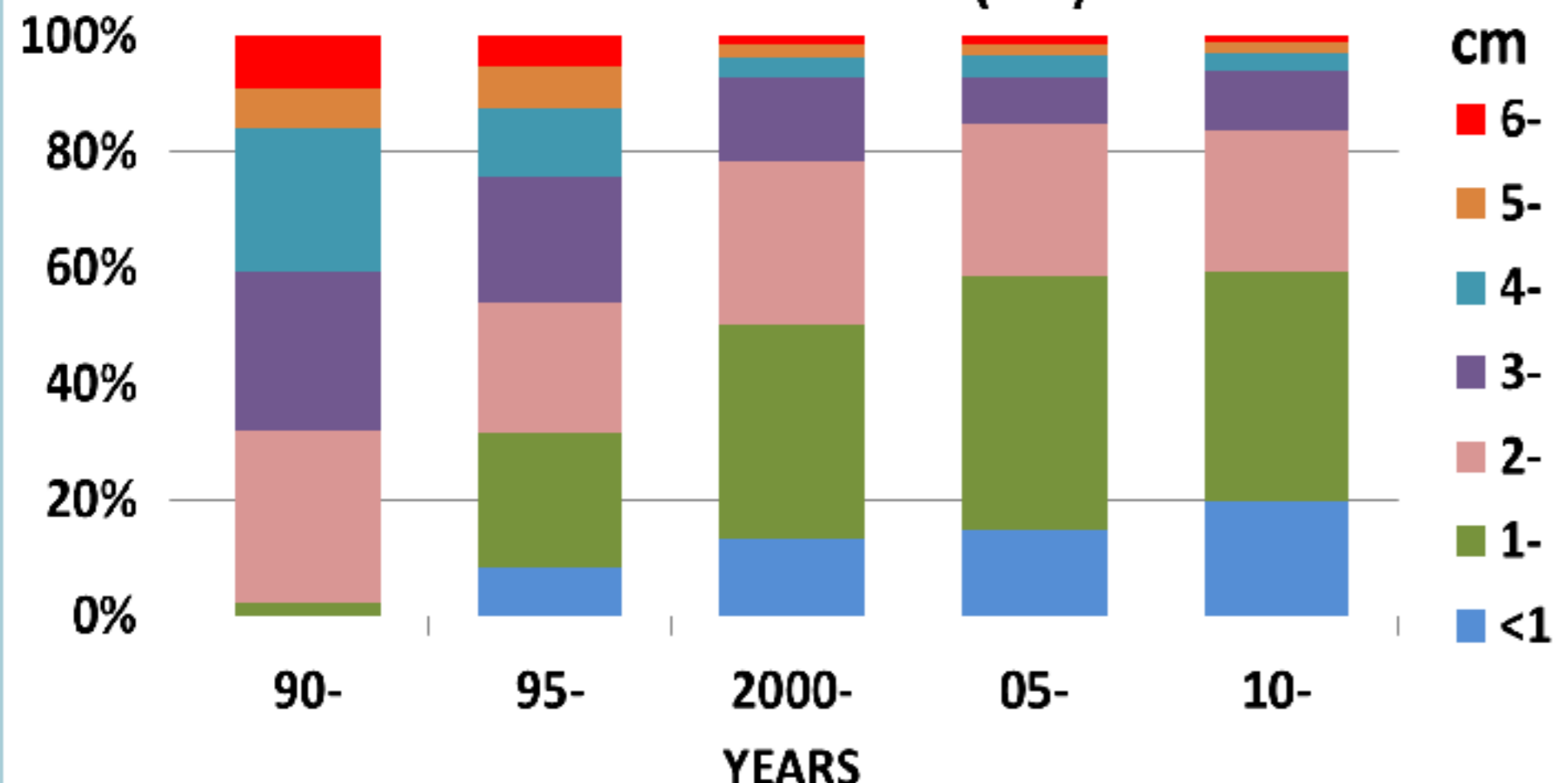
NEW PATIENTS (1990-2015)



DISTRIBUTION of AGE



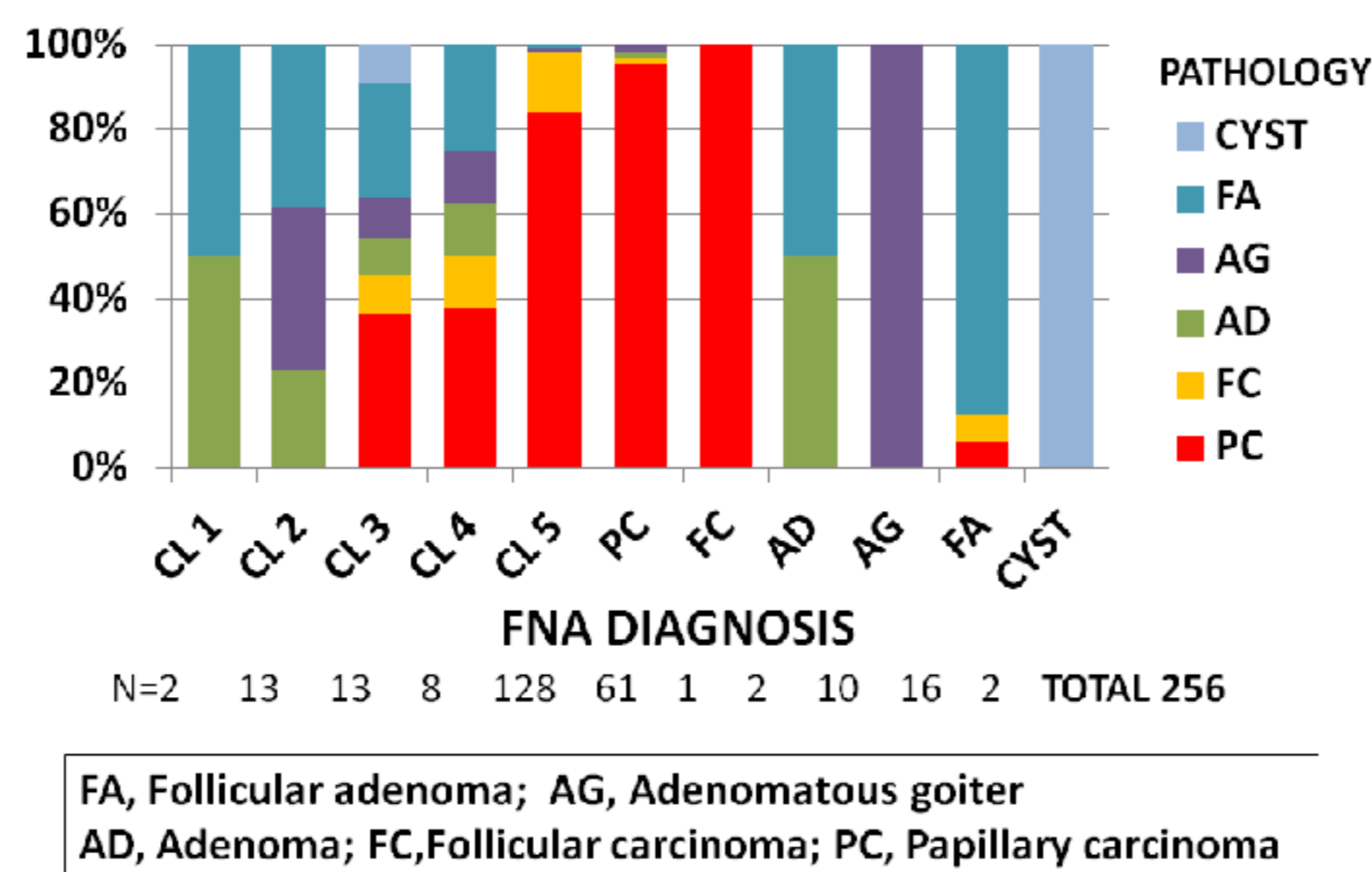
SIZE of NODULES (cm)



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).

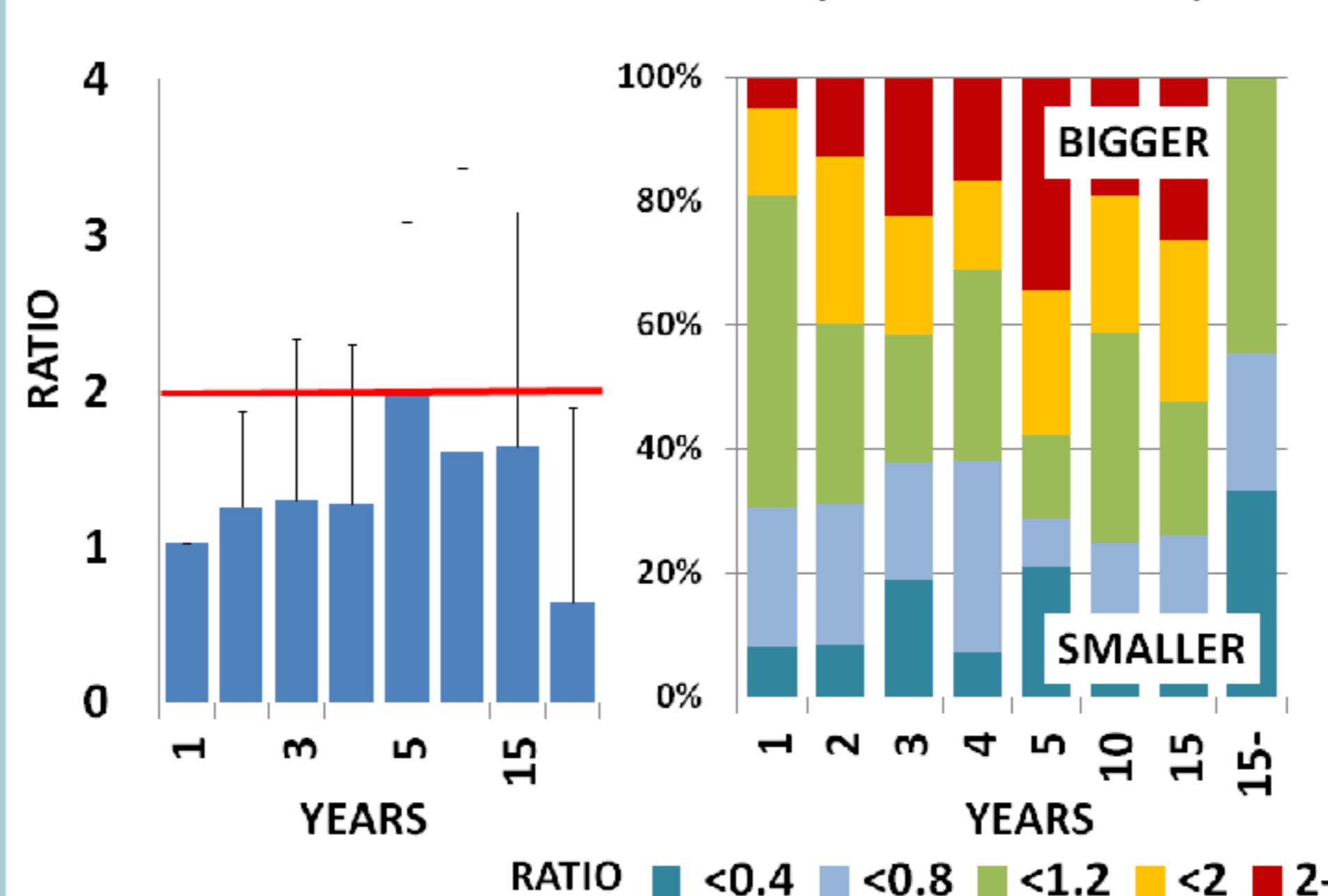
Comparison :FNA & Pathology



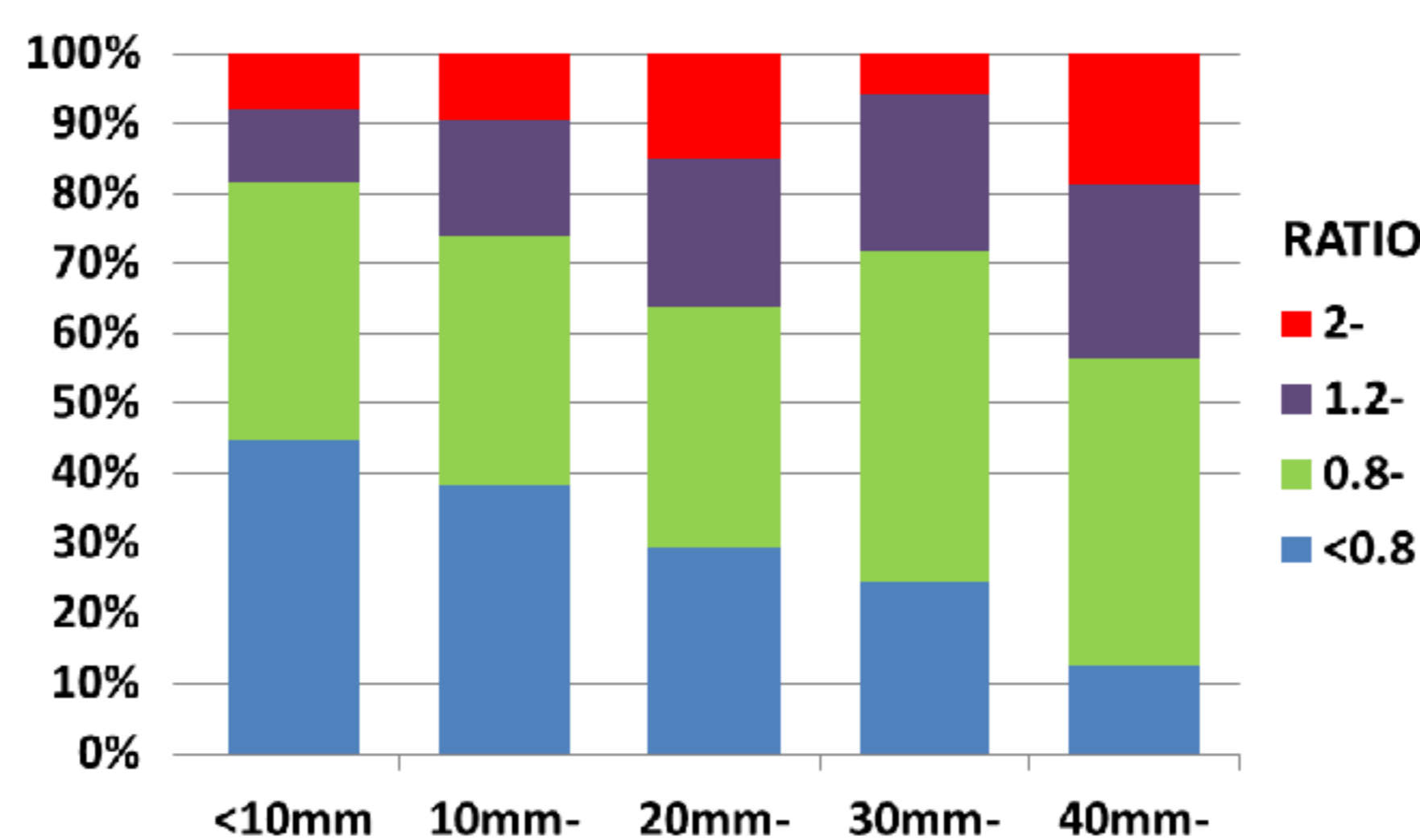
B. Morphological changes of solitary nodules:

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.

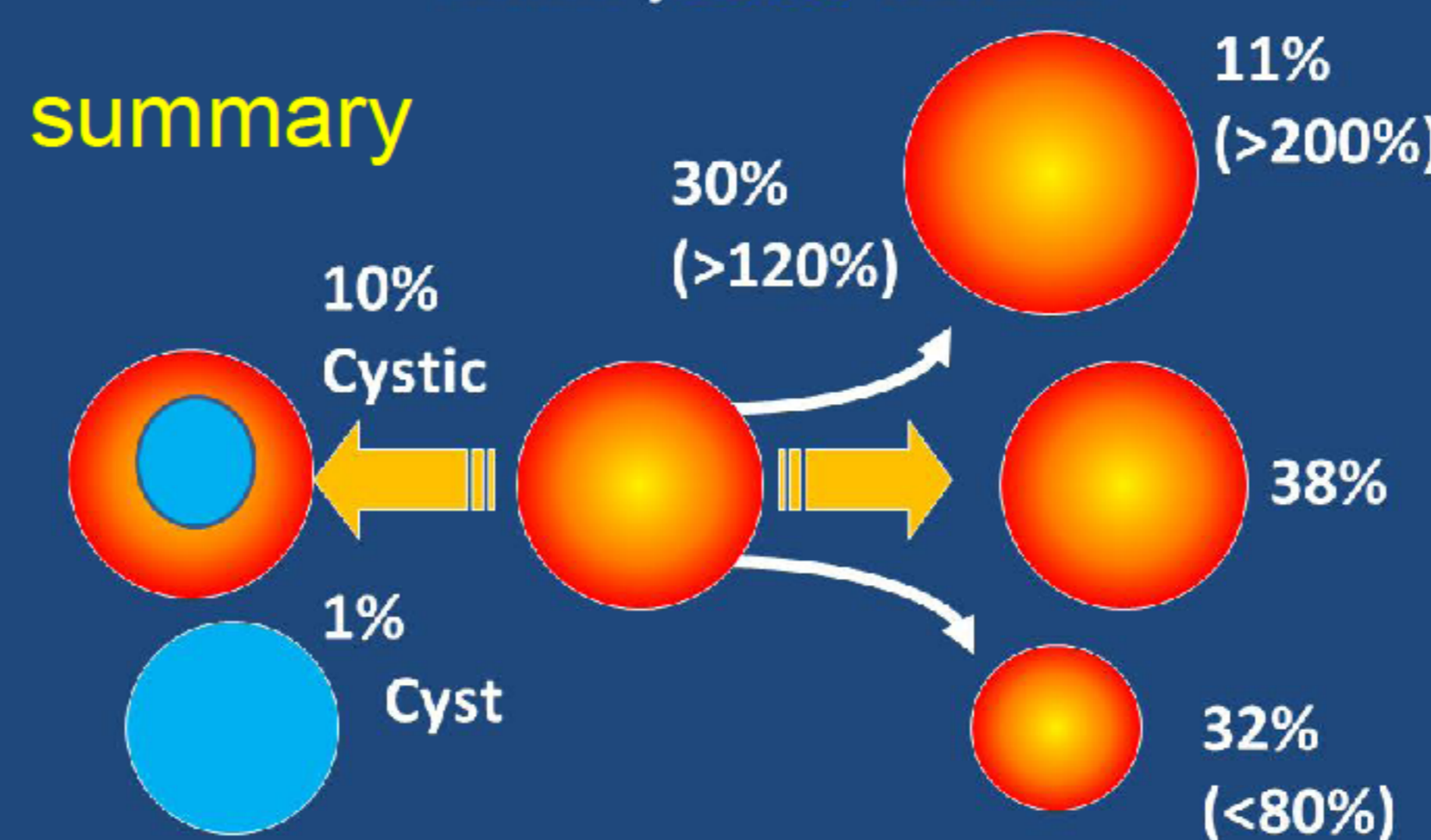
CHANGES of VOL (for 1ST DATA)



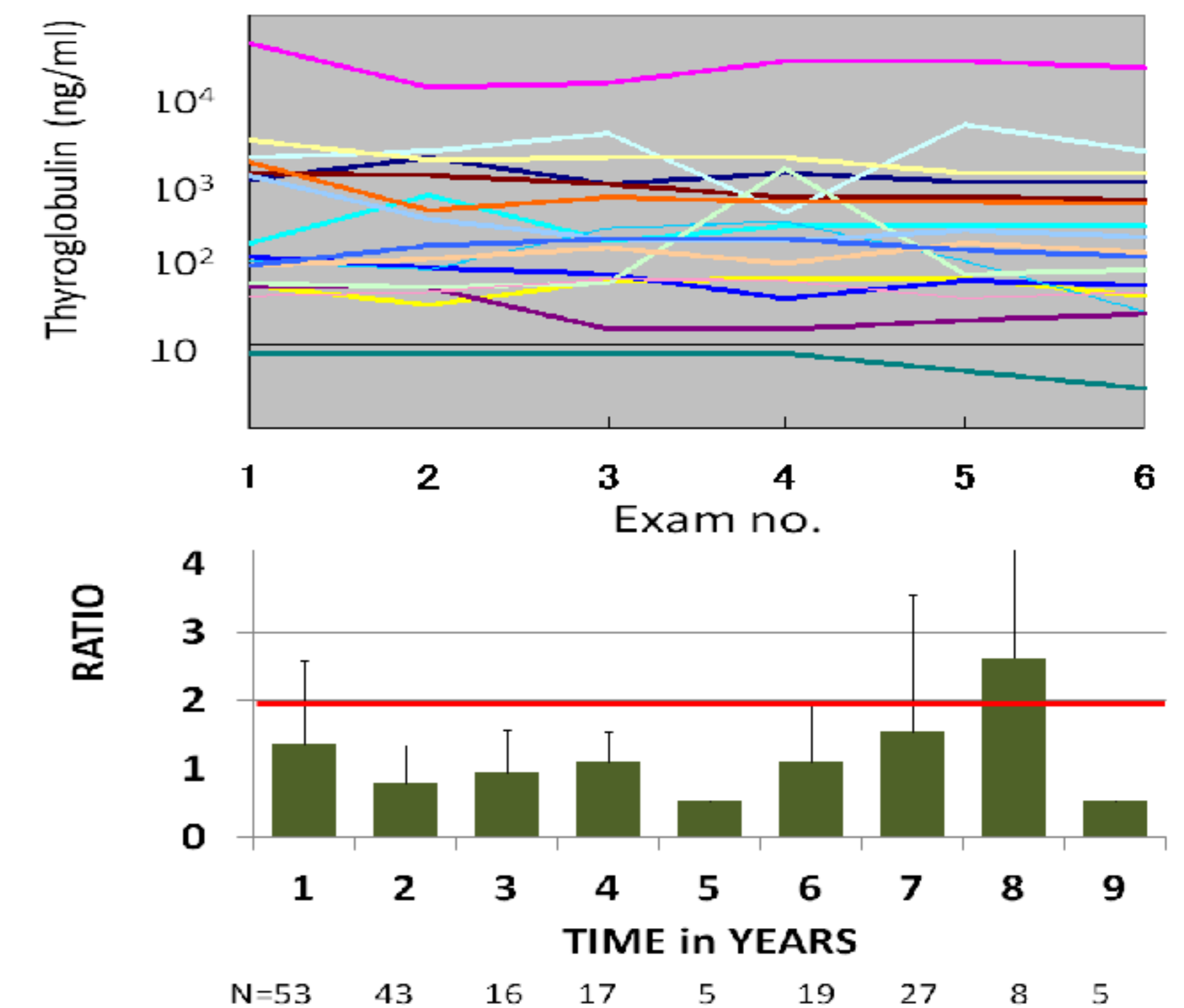
Changes of volumes in SIZE (comparison with 1st data)



CHANGES of NODULES Solitary solid nodules

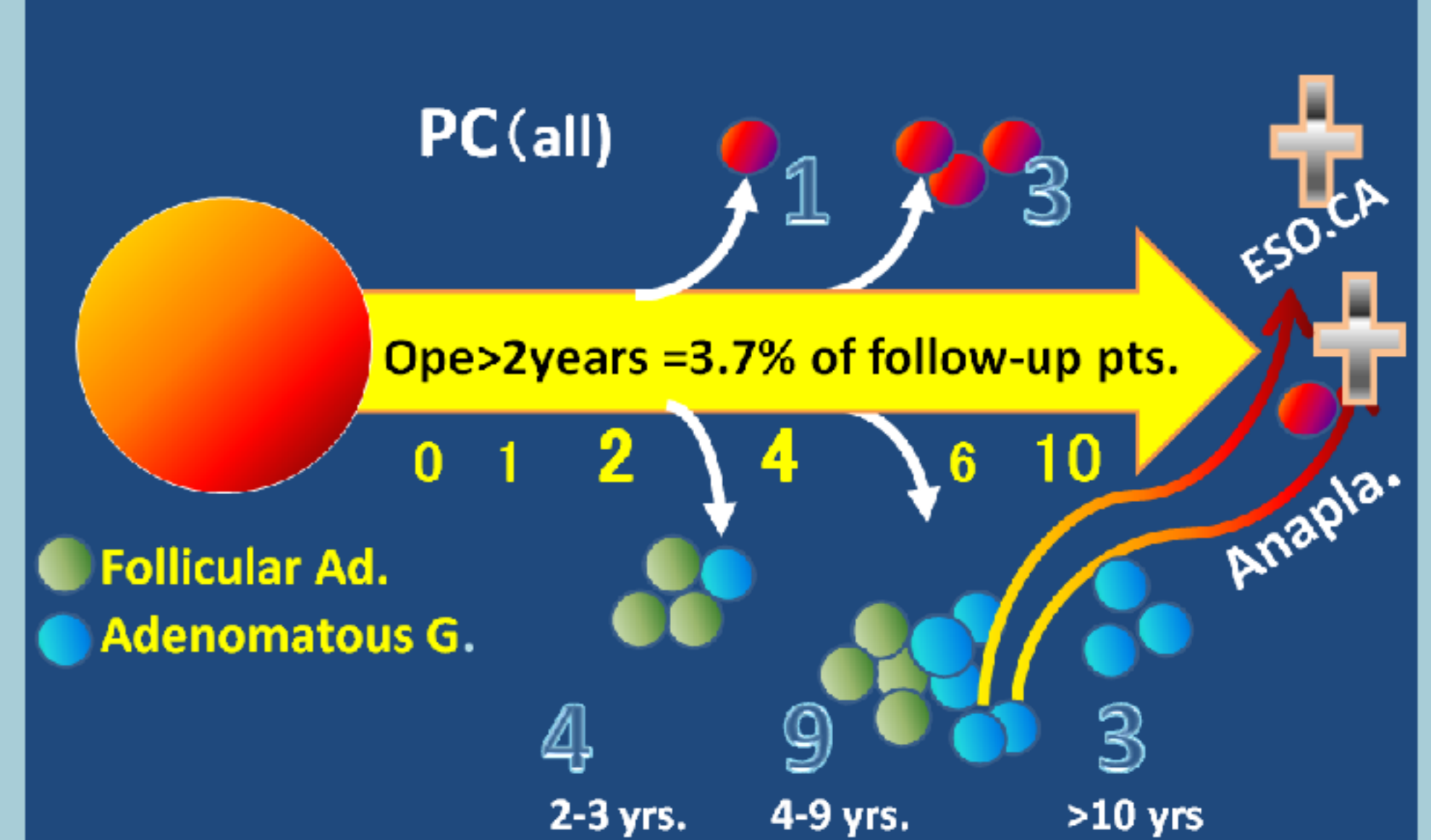


C. Tg levels: Tg levels remained stable during 5 years (n=100). The level, however, tended to increase after 10 years of follow-up period.



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).

CONSEQUENCES of "BENIGN" NODULES LATE SURGERY



DISCUSSION

New patients with NOD are decreasing in our hospital. NPP events seemed no apparent effect. Diagnostic graphic 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 lethal malignancies and that surgery may trigger disease progression. In addition surgery is not always harmless. The proper period for follow-up is unknown. We have no experience with very late (>10 years) diagnosis of cancer. Once diagnosed as benign, on 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.

COI: T.KUNORI : NOTHING to DECLARE

