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Percutaneous Ethanol Injection for Benign Cystic and Mixed Thyroid Nodules

Ayşenur Özderya, Kadriye Aydın, Naile Gökkaya, Şule Temizkan

Department of Endocrinology and Metabolism, Kartal Dr. Lutfi Kirdar Research and Training Hospital, İstanbul, Turkey

Abstract

Background/Aim: We aimed to determine the effect of percutaneous ethanol injection (PEI) on volume of cystic and mixt thyroid nodules, thyroid function tests (TFTs), antibody titers and cytological changes for 1 year.

Methods: Fifty-five nodules of 53 patients with cystic and mixt properties treated with PEI were included. Nodule volumes. TFTs, thyroid autoantibodies were analyzed at baseline, 6th and 12th months. Fine needle aspiration biopsy (FNAB) was performed to PEI applied nodules in the 12th month. Thyroid nodules were grouped into three by structural properties (pure cystic, predominant cystic, predominant solid).

Results: PEI caused a volume reduction of 80.7% at 6th month and 82.1% at 12th month without any serious complication. PEI was repeated 1.4±0.4 times with a mean total ethanol amount of 3.6±3.1 mL. Volume reduction in the pure cystic nodules at 6th and 12th months after PEI was greater than the volume reductions in predominant cystic and predominant solid nodules. We detected that smaller nodules have greater volume reductions after PEI at 12th month. During the study, patients remained euthyroid. Anti-thyroglobulin levels were decreased at 12th months. None of the FNAB results was compatible with a malignant or suspicious for malignancy cytology at 12th month.

Conclusion: PEI is an effective way of treatment for benign cystic and mixt thyroid nodules without any serious side effects. We can also assume that PEI is not a trigger for autoimmunity and carcinogenesis for short term.

Table 1. Clinical characteristics of study population/

Gender (M/F) (n=53)	13/40
Age (years) (n=53)	44.6±13.9
Mean basal nodule volume (cm^3) (n=55)	13.9±12.9
Mean aspirated cyst fluid volume (mL) (n=55)	11.6±10.7
Mean total ethanol (mL) (n=55)	3.6±3.1
Nodule characteristics	
Pure cystic (n=12) (%)	21.8
Predominant cystic (n=30) (%)	54.6
Predominant solid (n=13) (%)	23.6

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Table 2. Thyroid function tests. thyroid autoantibodies and nodule volumes during the study

	Basal n=55	6th month n=55	12th month n=48	Pa (basal-6th month)	Pb (basal-12th month)
TSH	1.51±1.39	1.42±0.76	1.45±0.87	0.268	0.128
fT3	4.80±0.67	5.11±0.97	5.28±0.814	0.158	0.008
fT4	11.82±2.17	10.88 ±1.89	11.02±1.85	0.003	0.036
Total nodule volume (mL)	9.0 (4.4-20.90)	1.2 (0.3-4.1)	0.9 (0.2-4.0)	<0.001	<0.001
Percent decrease in nodule volume (%)		80.7±15.9	82.1±12.2		
A-TPO	0.4 (0-2.5)	1.4 (0-3.8)	0 (0-3.07)	0.357	0.822
A-TG	0.1 (0-1.62)	0 (0-1.10)	0 (0-0)	0.398	0.033

Pa for assessment of basal and sixth month; Pb for assessment of basal and tweltfh month
Abbreviations: TSH: thyroid stimulating hormone, fT3: free triiodothyronine, fT4: free thyroxine , A-TPO: antithyroid peroxidase antibody, A-TG: antithyroglobulin antibody.

Figure 1: A-B. Left lobe inferiorde before PEE 3.86x2.72x3.89 cm (21.24 mL) clear cystic nodule. **C.** The cystic nodule in the left lobe inferior was completely ablated, one year after PEI (Volume decline rate= 100%).