The role of percutaneous pure spirit injection in treatment of benign, solitary, cold, cystic nodule of the thyroid gland

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Abstract

Background: The role of percutaneous pure spirit injection of solitary thyroid nodules has been suggested by liviraghi in 1990 as a possible therapy for autonomously functioning toxic thyroid nodules. Percutaneous 95% spirit injection has been considered a safe, low cost and effective therapeutic procedure in patient with benign cystic thyroid nodule. The aim of this paper is to report our experience.

Patients and method: During the years 2001 and 2002, 152 patients with clinically detected solitary thyroid nodules were observed at Baghdad Medical City, including 72 patients having single, cystic and cold nodules. Fine needle aspiration cytology (F.N.A.C) was done for all patients, 57 patients were benign, 6 patients were malignant or suspicious and 9 patients with indeterminate aspirate. 60 patients were enrolled in a clinical study aiming at investigating the possible beneficial effects of pure spirit (ethanol 95%) injection.

Results: Pure spirit (ethanol) injection into thyroid nodule was done in only 60 patients. 42 patients (70%) with benign cystic thyroid nodules were successfully treated with aspiration and pure spirit injection, of them 24 patients (40%) had complete disappearance of nodule, 18 patients (30%) had reduction in the size of nodule in more than (50%) versus baseline. Over 1-2 years period of follow up there was 2 recurrent cases (3, 3%). In 18 patients (30%) no significant reduction was obtained after month of spirit injection.

Conclusion: Percutaneous 95% spirit injection of cystic thyroid nodule was beneficial in 70% of cases suggesting a potential role for this therapy.

Introduction

Single thyroid nodule is a common thyroid problem. The large majority of these nodules are benign and the incidence of malignancy in cold solitary thyroid nodule is 10% 20%. [1,2]. Ultrasound can provide information regarding the consistency of cold thyroid nodule being cystic or solid, 2-9% of cystic thyroid nodule may harbor malignant tumor[3,4]. Fine needle aspiration cytology (FNAC) is safe, and may be used to diagnose, treat and sometimes cure the cystic thyroid nodule[5,6].
The role of percutaneous pure spirit injection of solitary thyroid nodules was first proposed by Liviraghi in 1990 as a possible therapy for autonomously functioning toxic thyroid nodules. Percutaneous 95% spirit injection has been considered a safe, low cost and effective therapeutic procedure in patients with benign cystic thyroid nodule [7, 8].

**Patients and methods**

During the years 2001 and 2002, 152 patients with solitary thyroid nodules detected clinically and confirmed by ultrasound, and Tm thyroid scan were observed at Baghdad Medical City, including 72 patients (no females, and males) having single, cystic and cold nodules. Fine needle aspiration cytology (F.N.A.C) was done for all patients (72), 57 patients were benign, 6 patients were malignant or suspicious and 9 patients with indeterminate aspirate.

60 patients were enrolled in a clinical study aiming at investigating the possible beneficial effects of pure spirit (ethanol 95%) injection. Serum thyroid hormones were available for only 31 patients. 60 patients were enrolled in a clinical study aiming at investigating the possible beneficial effects of pure spirit (ethanol 95%) injection. Pure spirit (ethanol) injection into thyroid nodule was done in only 60 patients as described by Lowhagen and others [6]. 42 patients (70%) with benign cystic thyroid nodules were successfully treated with aspiration and pure spirit injection.

**Technique:** Standard technique was used as described by Lowhagen, FNAC was performed with patient in supine position and neck was extended, the patient was instructed to refrain from swallowing. The nodule steadied by left hand, no. 21 gauge hypodermic needle attached to a 20 cc syringe is inserted into with continuous suction in and out. When aspiration had been completed small amount (1-5ml) of 95% spirit is injected slowly on the bases of the aspirated volume without removing the needle. There is no need for bed rest or hospitalization for observation. Spirit injection was done once in 44 patients, twice in 10 patients. And three times in 6 patients.

Follow up: after pure spirit injection, follow-up of the patients clinically and by ultrasound was done for 1-2 years. First visit was after 1 week to check the result of fine needle aspiration cytology and the size of nodule, second visit 1 months later on, and then 6-12 months.

**Result**

Percutaneous 95% spirit (ethanol) injection of cystic thyroid nodule was done for 60 patients. In 12 patients spirit injection was not done because of small amount of material aspirated (0.1-0.2ml), of them 10 cases operated upon because of cytological findings were malignant, suspicious or indeterminate. After spirit injection we followed the patients clinically and by ultrasound scan for 1-2 years. One month after the treatment, nodule size reduction greater than 50% versus baseline was observed in 42 patients (70%) including 24 patients (40%) had complete disappearance of nodule, 2 cases recurrent in 6-12 months later on. In 18 patients (30%) no significant reduction
in size of nodule (either no reduction or less than 50% versus baseline) Five of them operated upon because of cytological indication (malignant, suspicious or indeterminate) or repeated rapid re-accumulation, the other 13 patients not operated on because they had benign cytological diagnosis, we kept them on close follow up for 1-2 years as shown in table2. Repeated aspiration and spirit injection (two or three times) was done in 16 patients, either because of re-accumulation or no reduction had been obtained. Complications requiring hospitalization were not observed.

Discussion

Verda and his colleagues have found that 80% of patients with benign cystic cold thyroid nodule gets nodular volume reduction greater than 50% after one month from pure spirit injection with 3% recurrence after 1 year of follow up [2]. Papini et al have found non-toxic solitary thyroid nodules are successfully treated in 90-100% of patients by percutaneous ethanol therapy (PET) and recurrence rate in only 2-5% [4].

Panunizi et al [8] treated 30 patients with autonomous thyroid nodules by PET, his experience confirm an excellent response and symptoms of hyperthyroidism and hormonal level because normal and at ultrasound evaluation all nodules had significant shrinkage. in our study the overall end result over long term follow up was 40 patients (66.6%) had significant volume reduction of benign cystic thyroid nodule, of them 24 patients (40%) had complete disappearance of nodules is not mentioned in the other studies. Thyroid damage induced by spirit characterized by coagulative necrosis and hemorrhagic infarction due to vascular thrombosis and is well defined from surrounding thyroid parenchyma, and in cystic nodules the spirit will irritate the wall of the cyst to induce fibrosis.

Conclusion

Percutaneous 95% spirit injection of cystic thyroid nodule was beneficial in 70% of cases suggesting a potential role for this therapy.

References

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