Percutaneous ethanol injection (PEI) has been proposed for the management of small hepatocellular carcinomas as an alternative modality of treatment devoid of the complications related to surgery in this kind of patients (1-4). Likewise, PEI has been used for liver and peritoneal metastases of abdominal tumors (1), offering the possibility to attack lesions unlikely to be controlled by surgery and/or chemotherapy. The mechanism of action of ethanol appears to be related to cellular dehydration followed by coagulative necrosis and vascular thrombosis and occlusion.

On the other hand, the use of PEI has also been proposed for non-malignant nodular lesions, such as parathyroid adenomas causing either primary (5, 6) or secondary (7) hyperparathyroidism. This modality of treatment appears to be particularly suitable for patients with chronic renal failure in whom the surgical risk of parathyroidectomy is high.

In 1990, Livraghi et al. (8) suggested that autonomous single thyroid nodules can be treated effectively by this technique. This has subsequently been confirmed by several Italian groups both in pretoxic and toxic single thyroid adenomas (9-14). Recently, the results of a multicenter study enrolling more than 300 patients from several Italian institutions have supported the efficacy of PEI (15), suggesting that this procedure can indeed represent a useful alternative to thyroid surgery or radiiodine administration. It should be pointed out that PEI for thyroid "hot" nodules is not completely devoid of side effects, which can be minor and transient (local or irradiated pain, fever, dysphagia) or major, albeit usually transient, such as dysphonia. Therefore, this technique should be restricted to nodules with an integer capsule and carried out by experienced physicians exclusively under ultrasound guidance. In addition, because PEI causes thyroid destruction (16), its use can be followed by a transient increase in serum thyroid hormone concentrations. It is therefore advisable to pretreat patients with thionamides in order to deplete intrathyroidal stores of preformed hormones. A further word of caution relates to the lack of long-term follow-up studies evaluating both the occurrence of hypothyroidism and the persistence or recurrence of "hot" nodules.

Percutaneous ethanol injection has been applied successfully also to isolated cystic thyroid nodules (17). The implication is that PEI might also in this case, constitute a good alternative to surgery or intranodal sclerosing tetracycline injections. For cystic thyroid nodules only one or two ethanol injections appear to be curative, thus producing limited discomfort to the patient. Taking into account the low efficacy of medical treatment (i.e. L-T4 suppressive therapy) for cystic lesions, PEI might have an important role in the non-surgical management of single thyroid cysts.

Goletti et al. (18) have reported recently the use of PEI in non-functioning ("cold") solid thyroid nodules. However, it would appear that PEI should be applied with great caution in the treatment of "cold" nodules, because small foci of thyroid carcinoma can harbor within an apparently benign "cold" nodule, which might not be destroyed by PEI.

A novel application of PEI is proposed by Rossi et al. in this issue of European Journal of Endocrinology (19). These authors report the successful treatment of an aldosterone-producing adrenocortical adenoma by a single 4-ml PEI carried out under CT guidance. This procedure was followed by a transient increase in plasma aldosterone and cortisol levels; circulating levels of these hormones, as well as of plasma renin activity, subsequently normalized and remained normal at the end of a 17-month follow-up period (19). The authors suggest that PEI may represent an alternative approach to surgery in the management of carefully selected patients with aldosterone-producing adenomas. This conclusion is indeed very interesting, in view of the possibility of avoiding abdominal surgery and improving dramatically the cost/benefit ratio, because this procedure can be performed on an outpatient basis. It should, however, be pointed out that recently developed laparoscopy techniques, although requiring hospitalization, have gained diffuse acceptance because of their ease and feasibility associated with limited surgical problems (20). The laparoscopic surgical approach provides a direct view of the adrenal mass, allows its complete removal and, last but not least, allows a definitive histological examination. Therefore, the use of PEI for adrenal masses should be considered once the suspicion of malignancy has been excluded. Obviously, this procedure does not apply to adrenal nodules for which the diagnosis of pheochromocytoma has been established or is suspected, because of the risk of potentially lethal hypertensive episodes.
Acknowledgments. This work has been supported in part by grants from the Ministero della University e della Ricerca Scientifica e Tecnologica (MURST, 40% and 60%) and from the National Research Council (CNR), Rome, Italy—Target Project “Prevention and Control of Disease Factor (FATMA)”, grant no. 9300689F41.

References


Received December 14th, 1994
Accepted December 19th, 1994