BACKGROUND

Adrenal vein sampling (AVS) is recognized by Endocrine Society guidelines as the only reliable means to distinguish between aldosterone producing adenomas and bilateral adrenal hyperplasia, thereby supporting the most cost-effective and straightforward strategy for establishing the site of aldosterone overproduction. AVS protocol and standardization vary between centers. In addition to the SI and localization index (LI) (see below), some authors have emphasized the importance and usefulness of contralateral adrenal biopsy to identify the source of aldosterone production and many centers require this additional criterion together with a defined LI to suggest adrenalectomy to a PA patient.

OBJECTIVE

The objective of the present study was to assess whether the presence or absence of contralateral (CL) suppression has an impact on the postoperative clinical and biochemical parameters in patients who underwent unilatera adrenalectomy for PA.

DESIGN & METHODS

The study was retrospectively carried out in 8 referral hypertension centers in Italy, Germany and Japan. Screening and subtype differentiation were performed according to the Japan Endocrine Society and The Endocrine Society guidelines and a total of 234 AVS procedures were included in the study (Figure 1). CL suppression was defined as aldosterone/cortisol < 0.2 in those centers to diagnose unilateral PA.

RESULTS

Clinical and biochemical parameters of patients participating in the study are summarized in Table 1. Clinical and biochemical parameters after adrenalectomy are summarized in Table 2. Overall, 192/234 (82%) of AVS studies displayed contralateral (CL) suppression, with no statistically significant differences among centers. ACTH stimulation was associated with a significant (p=0.014) increase in the percentage of AVS showing CL suppression, compared with basal studies (80% vs 77%). CL suppression was slightly but not significantly higher in studies with bolus ACTH vs basal studies (88% vs 77%, p=0.07), significantly higher in studies with continuous ACTH infusion vs basal (91% vs 77%, p=0.02) and similar in the two types of ACTH stimulation (88% vs 91%, p=0.44). Fifty-three AVS were performed both under basal conditions and after ACTH stimulation. We observed a statistically significant inverse correlation between CL ratio and serum aldosterone levels at diagnosis (R2=0.04, p=0.02), but not between CL ratio and systolic blood pressure, potassium and age at diagnosis of PA. Moreover, regression analysis showed that serum aldosterone levels but not SBP and potassium levels predicted CL suppression during AVS. Among AVS parameters, CL ratio inversely correlated with localization index (R2=0.025, p=0.01) and patients with LI>4 displayed a significantly higher proportion of CL suppression compared to patients with 3<LI<4 (84/241, 17% vs 623, 35%, p<0.001).

Patients with CL suppression had higher plasma aldosterone levels at diagnosis than patients who did not have suppressed CL aldosterone secretion, whilst we did not observe significant differences in systolic and diastolic blood pressure, potassium, PRA, PRC and number of drugs used to treat the patients (Table 3). Both in basal and ACTH stimulated conditions (p<0.001 and p=0.14 respectively), median localization index was significantly higher in patients who showed contralateral adrenalectomy suppression (Figure 2). No differences were observed between the two groups for the main clinical and biochemical parameters (SBP, DBP, aldosterone, PRA, PRC, Ki, number of drugs, reduction of blood pressure levels and number of classes of drugs assumed by the patients). However, patients with CL suppression underwent a significantly larger reduction in aldosterone levels after adrenalectomy (Table 4).

CONCLUSIONS

For patients with lateralization indices of > 4, CL suppression should not be required to refer patients to adrenalectomy because it is not associated with a larger blood pressure reduction and might exclude patients from curative surgery.