Endocrine (2011) 40:134–136
DOI 10.1007/s12020-011-9487-9

RESEARCH LETTER

Low investigation rate for adrenal incidentalomas

S. Bujawansa · D. Bowen-Jones

Received: 16 April 2011 / Accepted: 28 April 2011 / Published online: 12 May 2011

Abstract The prevalence of adrenal incidentaloma has increased with the increasing use of imaging techniques. While majority are benign adenoma, a small but significant minority may be primary adrenal carcinoma or have endocrine hyper secretion. Existing guidance suggests that excess catecholamine and cortisol secretion should be ruled out in all cases and excess aldosterone secretion should be ruled out in hypertensive patients. Repeat evaluation after a period of time is also suggested. We have reviewed the management of adrenal incidentaloma in a large district general hospital in the North West of England.

Keywords Adrenal incidentaloma · Investigation · Follow up

Introduction

Adrenal incidentaloma is defined as a clinically unsuspected adrenal mass that is incidentally detected after imaging studies conducted for reasons other than the evaluation of the adrenal glands [1].

The prevalence of adrenal incidentaloma has increased with the use of high resolution CT scanning and is cited at around 4.5% [2].

While a majority of these lesions are benign non-functioning adenoma, a minority may turn out to be primary adrenocortical carcinoma or lesions with hormonal hypersecretion. Even by conservative estimates the prevalence of adrenocortical carcinoma among adrenal incidentaloma is 1.9%. The prevalence of phaeochromocytoma is 3.1% and that of hyperaldosteronism is 0.6% [3].

The prevalence of subclinical hypercortisolism is 6.4% [3]. There is evidence that this is associated with osteoporosis, type 2 diabetes mellitus and increased cardiovascular risk [4]. There is emerging evidence that these conditions can be improved by surgically removing the adrenal adenoma [5].

Computerized tomographic (CT) features can be useful in evaluating adrenal lesions. The risk of primary adrenocortical carcinoma is low (<2%) in lesions less than 4 cm but increases to 25% in lesions over 6 cm [1]. An attenuation of less than 10 Hounsfield units on an unenhanced scan is suggestive of a benign adenoma. The rapidity of intravenous contrast washout is also considered to be useful in characterizing these lesions [1, 6].

There are several guidelines and reviews on the management of these lesions. All of them advocate ruling out a phaeochromocytoma [1, 4, 6–9]. They suggest that hyperaldosteronism should be excluded in hypertensive patients. Some guidelines suggest that hypercortisolism should be ruled out in all patients [1, 6–8], while others state that it should be excluded in patients with features of Cushing's syndrome [9]. There is some discrepancy in the suggested biochemical methods and cut-offs between different guidelines.

Although the risk of progression of these lesions appears to be relatively low, most guidelines advocate long-term follow up, although there are differences in the suggested protocols [1, 4, 6–8]. The National Institute of Health suggests repeat scanning in 6–12 months and annual biochemical evaluation for 4 years although it has admitted that there is limited evidence for this approach [6].

Though there is clear guidance on how to approach these lesions, actual clinical practice seems to deviate

S. Bujawansa (✉) · D. Bowen-Jones
Endocrine Unit, Wirral University Teaching Hospital Foundation Trust, Arrowe Park Hospital, Upton Road, Wirral CH49 5PE, UK
e-mail: sumudub@aol.com

significantly from them. To assess this, we assessed the management of adrenal incidentaloma in a large District General Hospital in the North-West of the United Kingdom.

Method and patients

We randomly selected abdominal CT scan reports from 2,694 patients who had their scans between August 2007 and February 2010 from the radiology reporting system. All patients with adrenal incidentaloma were identified and their clinical records were reviewed and data was collected on the initial investigations.

If at least one 24 h urine collection for catecholamine excretion was done, we considered that an attempt had been made to rule out a phaeochromocytoma. Likewise, if an overnight dexamethasone suppression test or at least one 24 h urine collection for free cortisol excretion was done, we considered that an attempt had been made to evaluate for cortisol excess. If a plasma renin:aldosterone was done, we considered that an attempt was made to exclude hyperaldosteronism.

Records of patients who have had the adrenal lesion for over 1 year at the time of data collection were assessed to see whether any follow up investigations have been arranged. Permission to study the records was approved by the clinical audit department of the institution.

Results

Adrenal incidentaloma were reported in 93 of 2,694 patients who had scans for indications unrelated to evaluating the adrenals, giving rise to an approximate prevalence of 3.45%. Eleven patients had previously known adrenal adenoma and were excluded.

The average age of the population was 71 with a range of between 37 and 92 years. Fifty-two (63.4%) of the patients were female.

Thirty-four scans (41.4%) were requested by physicians and the rest were requested by other disciplines. Thirty scans (36.6%) were undertaken because of clinical suspicion of malignancy and a further 23 (28%) were carried out during an acute presentation.

The size of the lesion was reported in 68 (82.9%) scans. The average size was 1.68 cm. The Hounsfield value during the unenhanced phase was reported in only 13 scans (15.9%) and was more than ten in six scans. Forty-three of the lesions (52.4%) were reported as adenoma and ten were reported as indeterminate.

Excess catecholamine secretion was ruled initially in only five cases (6.1%) and only three patients (3.7%) had excess cortisol secretion ruled out. Two patients (2.4%) had tests for excess aldosterone secretion requested.

Only twelve patients (36.4%) had repeat imaging done and only three (9.1%) had repeat biochemistry done out of 33 patients who should have potentially been followed up.

Discussion

The prevalence and the sex distribution of adrenal adenoma in the population are comparable to the existing data.

The management of adrenal incidentaloma in the actual clinical setting seemed to deviate significantly from the published guidelines and appeared to be suboptimal. One possible explanation for this may be that over 65% of the scans were requested as an emergency or when malignancy was queried, and the adrenal lesion may have been overlooked while the immediate problem was being dealt with.

A large majority (58.6%) of the scans were requested by surgical specialists. These clinicians may not be very familiar with management guidelines.

The quality of radiology reports with regard to adrenal incidentaloma seemed to be variable. The size of the adrenal lesion is an important factor in assessing the possibility of malignancy [1, 6] and is a predictor for the development of future endocrine hypersecretion [7]. Growth of more than 2 cm/year is suspicious of malignancy [4]. In the study 17.1% of the radiology reports did not comment on the size of the adrenal adenoma. The attenuation value was not mentioned in 85.1% of the scans.

Non-specialists who are likely to request abdominal imaging should be educated regarding the importance of appropriately investigating and following up adrenal incidentaloma. In addition, radiologists reporting on abdominal imaging should be encouraged to comment on features which would be useful in characterizing these lesions.

References

1. G. Mansmann et al., The clinically inapparent adrenal mass: update in diagnosis and management. Endocr. Rev. **25**(2), 309–340 (2004)
2. L. Hammarstedt et al., Adrenal Study Group of Western Sweden. Adrenal lesion frequency: a prospective, cross-sectional CT study in a defined region, including systematic re-evaluation. Acta Radiol. **51**(10), 1149–1156 (2010)
3. T.J. Cawood et al., Recommended evaluation of adrenal incidentalomas is costly, has high false-positive rates and confers a risk of fatal cancer that is similar to the risk of the adrenal lesion becoming malignant; time for a rethink? Eur. J. Endocrinol. **161**(4), 513–527 (2009)
4. W.F. Young Jr., The incidentally discovered adrenal mass. N. Engl. J. Med. **356**, 601–610 (2007)

5. I. Chiodini et al., Beneficial metabolic effects of prompt surgical treatment in patients with an adrenal incidentaloma causing biochemical hypercortisolism. J. Clin. Endocrinol. Metab. **95**(6), 2736–2745 (2010)
6. NIH state-of-the-science statement on management of the clinically inapparent adrenal mass ("incidentaloma"). NIH Consens. State Sci. Statements. 19(2), 1–25 (2002)
7. American Association of Clinical Endocrinologists and American Association of Endocrine Surgeons Medical Guidelines for the Management of Adrenal Incidentalomas: executive summary of recommendations
8. M.A. Zeiger et al., American Association of Clinical Endocrinologists and American Association of Endocrine Surgeons Medical Guidelines for the Management of Adrenal Incidentalomas: executive summary of recommendations. Endocr Pract **15**(5), 450–453 (2009)
9. L.K. Nieman, Approach to the patient with an adrenal incidentaloma. J. Clin. Endocrinol. Metab. **95**(9), 4106–4113 (2010)