

Prevalence of adrenal incidentaloma

a methodologic comparison of EMR query strategies

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Disclosures

- Michio Taya Nothing to disclose
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- Eran Bellin Nothing to disclose
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Background

- Adrenal “incidentalomas” are adrenal nodules ≥ 1 cm detected incidentally on radiologic examination of the abdomen for non-adrenal and non-malignancy related indications
- Radiologic prevalence of 4.4%¹
- Often are of uncertain clinical significance

1. Bovio S, Cataldi A, Reimondo G, et al. Prevalence of adrenal incidentaloma in a contemporary computerized tomography series. J Endocrinol Invest. 2006;29(4):298-302.

Rationale & Objective

- Methods of ascertaining prevalence vary between studies, with one recent study reporting a prevalence of 0.6% when identifying cases by documented diagnosis in the EMR¹
- **Study Purpose:** To compare methods of ascertaining prevalence of adrenal incidentaloma

1. Lopez D, Luque-Fernandez MA, Steele A, Adler GK, Turchin A, Vaidya A. "Nonfunctional" Adrenal Tumors and the Risk for Incident Diabetes and Cardiovascular Outcomes: A Cohort Study. *Ann Intern Med.* 2016;165(8):533-542.

Methods

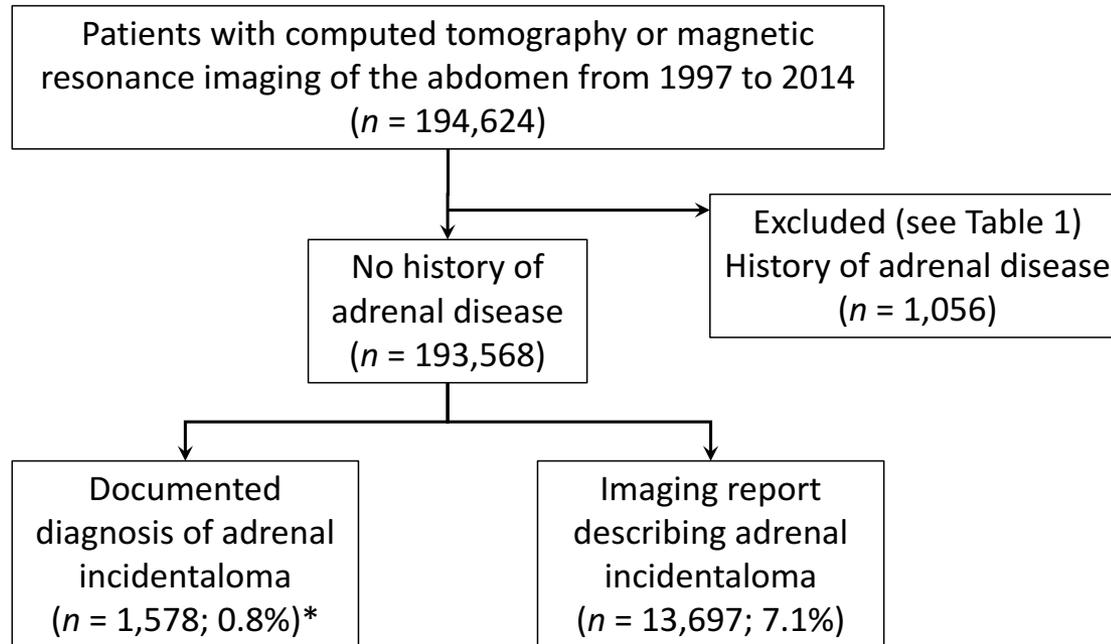
- Retrospective electronic medical record study using Looking Glass™ Clinical Analytics, (Streamline Health, Atlanta, GA) at Montefiore Medical Center
- All patients with CT or MR imaging of the abdomen between 1997 and 2014 were identified
- Patients with a documented diagnosis (ICD-9 code or problem list) for any history of adrenal disease were excluded

Methods

- Prevalence of adrenal incidentaloma was ascertained by two different detection strategies:
 1. **Documented Diagnosis** of adrenal incidentaloma
 2. **Imaging Reports** containing in the same sentence “adrenal” and “nodule,” “adenoma,” or “mass” and not containing “no” and “adrenal” in the same sentence.
- Adrenal pathology surprise was further established in the second approach by excluding patients with past adrenal lab testing (cortisol, aldosterone, catecholamines, ACTH, renin) or having been registered in the cancer registry for any cancer excluding superficial skin cancers

Results

Figure 1. Two strategies to assess prevalence of adrenal incidentaloma



*Compare with $n = 1,346$; 0.6% in Figure 1 of Lopez D, *Ann Intern Med* 2016;165(8):533-542.

Table 1. Adrenal Disease*

ICD-9 Codes ($n = 944$)	
194.0	Malignant neoplasm adrenal
198.7	Secondary malignant neoplasm adrenal
227.0	Benign neoplasm adrenal [#]
237.2	Neoplasm uncertain behavior adrenal
255.0	Cushing syndrome
255.1	Hyperaldosteronism
255.2	Congenital adrenal hyperplasia
255.3	Other corticoadrenal overactivity
255.4-5	Adrenal insufficiency
255.6	Pheochromocytoma/paraganglioma
255.8	Adrenal disorder not elsewhere classified [#]
255.9	Adrenal disorder not otherwise specified [#]
Problem List Categories ($n = 158$)	
Adrenal nodule [#]	
Adrenal adenoma [#]	
Adrenal mass [#]	
Adrenal neoplasm	
Adrenal insufficiency	
Hyperaldosteronism	
Malignant adrenal neoplasm	
Metastatic cancer of adrenal glands	
Other adrenal disease	

ICD-9=international classification of diseases, 9th revision
 *All entries represent exclusion criteria. Those marked with # also used for detection criteria.

Results

- 194,624 individuals were identified in our initial search, from which 1,056 were excluded for past adrenal disease
- Detection by the **documented diagnosis** method yielded 1,578 cases (**0.8%**), compared with 13,697 cases (**7.1%**) by the **imaging report** method
- Further restricting detection to true “Adrenal Surprise” by excluding those with any past adrenal lab testing and cancer history yielded 10,568 cases (6.1%)
- Validation studies for the 7.1% prevalence with 100 records revealed an adrenal incidentaloma positive predictive value (PPV) of 98%. When restricted to size ≥ 1 cm the PPV was 84%

Conclusions

- Comparing our first strategy using documented diagnoses as criterion for incidentaloma as used in a recent study by Lopez we found a prevalence of 0.8% in our population similar to her 0.6%. However, when searching at the level of radiology report text, we found a prevalence ten-fold greater at 7.1%
- Therefore, adrenal incidentaloma are more robustly identified by searching radiologic reports

1. Lopez D, Luque-Fernandez MA, Steele A, Adler GK, Turchin A, Vaidya A. "Nonfunctional" Adrenal Tumors and the Risk for Incident Diabetes and Cardiovascular Outcomes: A Cohort Study. *Ann Intern Med.* 2016;165(8):533-542.

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