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Literature Review: Incidentalomas in Emergency Medicine - How Often Are They Reported and Are Patients Informed?

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How often are they reported and are patients informed?

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Introduction:

The American College of Radiology (ACR) frames an interesting problem associated with radiologic imaging---that of findings that are *incidental* to the primary reason that the study was performed. There has been a rapid increase in the number of CT scans performed and there is an ongoing increase in the number of scans performed secondary to "ongoing improvement in the spatial and contrast resolution of these studies. The term *"incidentaloma"* is defined in the paper as an "incidentally identified mass or lesion detected by CT, MR or other imaging modality performed for an unrelated reason" *[1].* There is a statistically significant difference in the percentage of patients regarding change in management when recommendations made for incidentaloma management on the official CT report, compared to those where no recommendations were made (70% vs 2%) [2]. One study examining 1967 ED CT scans performed during 2-month period revealed that 329 CT examinations had relevant incidental findings and 39.8% of recommendations in official radiology reports were discordant with published guidelines [3]. The question of how to manage such incidental information becomes difficult; there is an underlying uncertainty and anxiety of the finding of an incidentaloma that may lead to more investigative measures with the objective of identifying the nature of any lesion that might even remotely represent a cancer [4]. Such guidelines are often based on expert opinion—and inconsistency among specialty societies can be a challenge [5]. The work-up of an incidental finding can trigger additional testing and/or diagnostic procedures in what has been called the "cascade effect" [6]. One German study looked retrospectively at 704 patients evaluated for trauma in an emergency department setting. 75% of those patients received whole-body spiral CT scans and 43% of the patients showed incidental findings. 6.7% of the patients showed incidental findings of high clinical relevance, defined as urgent and potentially life-threatening incidental findings. 47% of category 2 findings were not documented on discharge reports however [7]. An American ED study from the University of Pittsburgh looked at CT scans (for trauma) and found an overall incidental finding frequency of 43% of patients. This is essentially identical to the aforementioned German study. Surprisingly only 27% of those patient charts had mention of the finding in the discharge summary [8].

Proposal:

Objectives: The purpose of this proposed study is to look at the rate of incidental findings on CT scan in a community hospital (Kennedy Health System) setting, as well as to look at the rate of documentation of communication of the findings to the patient and referral for follow-up to primary care or to a specialty follow-up. Establish the frequency of overall frequency of incidental findings in the three campuses of the Kennedy Health System, Emergency Departments. CT scans of the abdomen, with or without contrast, will be studied. Establish the frequency with which patients are documented to have been advised of incidental findings on CT scan of the abdomen.

Hypothesis: The frequency of incidental findings on abdominal CT scans, with and without contrast, will be clinically significant, defined a priori as *greater than 5%* incidence. The frequency with which patients are NOT documented to have been advised of incidental findings on CT scan of the head, chest and abdomen will be greater than 5% (that is, less than 95% of patients will have charts documenting that they were advised of the incidental findings.

Design: Retrospective, chart review, randomly selected patients who received CT scans of the abdomen with or without contrast, within 48 hours of patient discharge, with data from Kennedy EDIS (ED Information System). Patients who are admitted to the hospital as well as those who are discharged will be studied. Evidence of documentation of the incidental finding will be defined as documentation noting that the patient was advised of the finding and that the report of the finding was provided to the patient. For patients discharged from the ED, the report may be part of the discharge instruction documentation.

The incidental findings will be categorized as per the method of Fakler [7]:

Incidental Findings	Category 1	Category 2	Category 3
Definition	High medical relevance with mandatory further diagnostic work-up and potential intervention prior to or shortly after hospital discharge.	Urgent and potentially life-threatening incidental findings with intermediate or low medical relevance. Additional diagnostics strongly recommended, but can be done after discharge in an out-patient setting.	Findings without clinical relevance. Follow up examinations or interventions are not necessary.
Examples	Lesions highly suspicious of malignant disease, non-trauma-associated aortic aneurysms with a diameter more than 5 centimeters, high-grade stenosis of major arterial vessels (>80%), pneumonia, etc.	Most likely benign lesions, aortic aneurysms with a diameter less than five centimeters.	Benign cysts of the kidney or liver, sinusitis, mucous retention cysts, degenerative disease of the joints or vertebral column, age-related cerebral atrophy and hernias (except incarcerated hernias).

Sample Size: 100 randomly selected CT scans of the abdomen, or abdomen and pelvis, with or without po or IV contrast. The scans will be reviewed from the three divisions. Note: The study is intentionally not powered to look for a difference between divisions. There is no hypothesis of a difference between divisions.

Inclusion Criteria: Retrospective, patients>18 years of age, CT abdomen performed with or without contrast, while in the ED. Patients may then be admitted or discharged.

Exclusion Criteria: Patients<18 years of age

Data Handling and Statistical Analysis: Data abstracted from EDIS will be coded on entry into study and will thus have no unique identifiers. Statistical analysis will be in the nature of a statistical description of the percent of incidentalomas by category, as well as the overall percent of incidentalomas.

Setting: Three campuses of the Kennedy Health System, Emergency Departments

Discussion:

The latest systematic review on incidentalomas and management recommended the need for more evidence based guidelines for reporting and managing incidentalomas as well as improving mechanisms of communication with referrals to ensure follow-ups [9]. Following up on incidentalomas produces anxiety and stress to both the physician and the patient. It leads to increased utilization of physician time, additional care with medical costs and follow-up testing, which may either benefit the patient however may also cause harm. And this stems from clinician and radiologist fear of litigation, subsequently leading to a cascade of testing [9]. In fact, though known that adrenal incidentalomas confer no risk of adrenal malignancy, between incidentalomas of the adrenal gland and its association with incidence of any malignancy [10]

Recommendations for additional imaging may not always be included in the official radiology report, particularly when patients are provided their discharge instructions. One study discusses a natural language processing algorithm to improve iteration and prevent errors in such cases. The program was more sensitive for detecting cases with recommendations for further imaging with a miss rate of only 3% [11]. Another recent pilot study addresses referrals for solid tumors for patient discharged from the emergency department [12].

Potential for Benefit: The potential for benefit is the quantitation of incidentalomas in a community ED cohort. However, the additional aspect of the study---that of the study of documentation that the incidentaloma was discussed with the patient and that referral for incidentaloma follow-up was provided, could lead to process improvement and educational efforts based on the baseline data of the study—in the direction of increased patient safety, better risk management. This data could lead to potential interventions, including possible educational and process changes with no anticipated harm. Thus, the risk/benefit ratio favors performing the study.

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