

Navigating the grey areas: The ethics of incidental findings in Radiology

Introduction

Incidental findings, otherwise known as incidentalomas, can be defined as an 'imaging abnormality in a healthy, asymptomatic patient or an imaging abnormality in a symptomatic patient, where the abnormality was not apparently related to the patient's symptom'. They are becoming increasingly common as imaging techniques become more advanced and their prevalence varies significantly between different imaging modalities (figure 1).

Incidentalomas can range from benign anomalies to potentially life-threatening conditions and can present ethical dilemmas for clinicians when deciding how to deal with these results. The four principles of medical ethics, namely autonomy, beneficence, non-maleficence, and justice, serve as a critical framework underpinning medical practice. This essay aims to set out the ethical challenges presented by incidental findings within each of these principles.

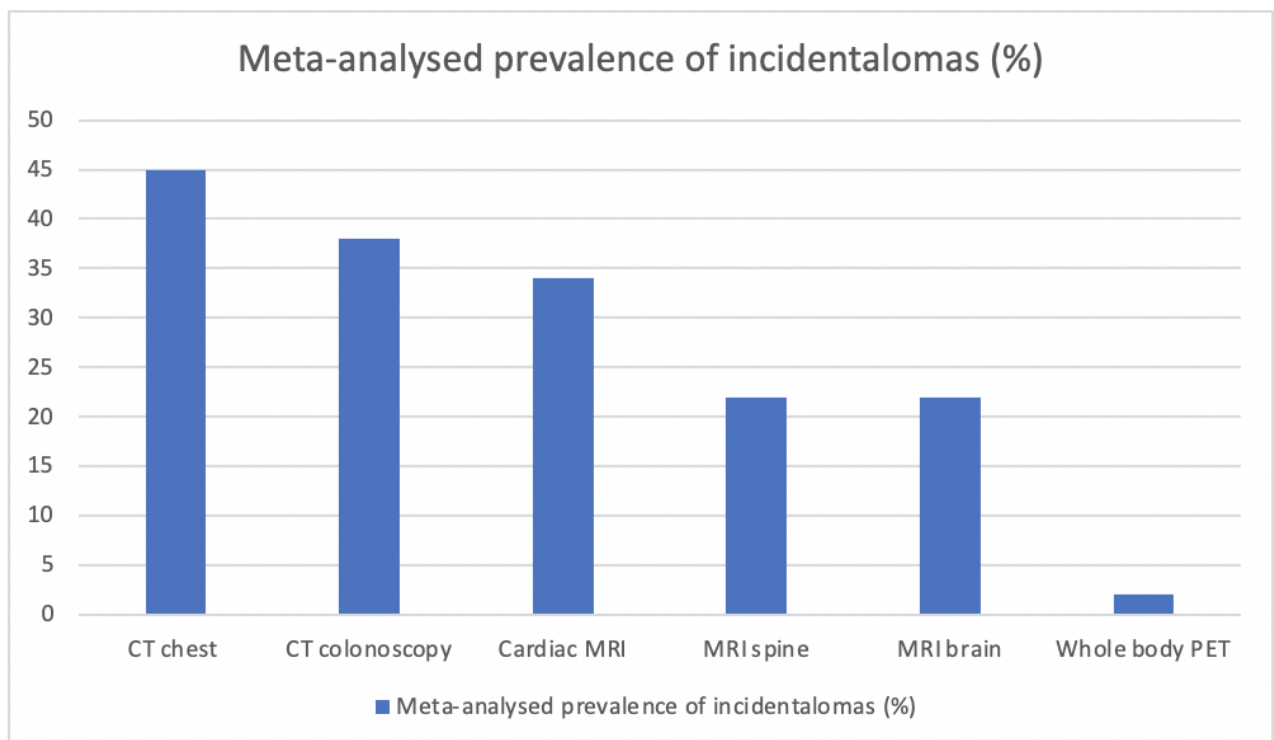


Figure 1: Meta-analysed prevalence of incidentalomas by imaging modality [1]

Autonomy

Autonomy in medical practice is expressed as the right of competent adults to make informed decisions about their own medical care, and each should be allowed to exercise his or her capacity for self-determination [2]. It could be argued that patients should have the autonomy to be informed about all incidental findings related to their care, enabling them to participate in decisions about further investigations or treatments. Conversely, it has been argued that by forcing information on patients we are directly violating their autonomy by denying them the ability to choose between knowing about the result or ignorance [3].

It therefore seems critical that patients are made aware of the risk of incidental findings prior to radiological examinations during the consent process so they can decide if they would like to be made aware of them or not. Unfortunately, in clinical practice it seems that informing patients of the risk and frequency of incidentalomas is almost non-existent at present. This seems to be in direct contrast to imaging done for research purposes where informed consent is routinely gained from patients regarding the risks of finding incidentalomas [4].

As technology grows it becomes even more important to warn patients about incidentalomas. Since November 2022 patients in England have been able to access their medical records on the NHS app, including radiology reports. A reported incidentaloma which is clearly benign and non-concerning to the radiologist and referrer may pose considerable questions and anxiety to patients. As we empower patients with information, it must be understandable for effective self-determination, and the Royal College of Radiologists has now stated that reports should be constructed with consideration to this new development. Nevertheless, this does not undermine the significance of clinicians providing patients with the opportunity to discuss results, ask questions, and clarify any incidental findings. Ensuring comprehensive explanations and necessary follow-up during these discussions can help prevent future anxieties and uncertainties for patients [5].

Beneficence

In medical ethics, beneficence can be described as the obligation of a physician to act for the benefit of the patient. Incidentalomas in radiology can be serious or even life-threatening, for example approximately 60% of renal cell carcinomas are diagnosed incidentally on scans done for a different reason [6]. In these cases, it is clear informing patients and discussing appropriate management and interventions may be of significant benefit, allowing earlier treatment and potentially reducing morbidity and mortality from previously unknown disease.

In some instances, incidental findings can also benefit the wider community. During the COVID-19 pandemic not all patients displayed signs and symptoms of the disease despite being infective. Some of these patients displayed incidental radiological findings on varying imaging modalities suggesting active coronavirus infection, allowing for earlier isolation and treatment, and preventing spread to other patients and healthcare workers [7].

Another potential benefit of incidental findings was identified in 2022, when a study found that breast arterial calcification, a common incidental finding on mammograms, adds significant prognostic information for cardiovascular disease (CVD) in postmenopausal women [8]. The NHS Breast Screening Programme is offered to women between the ages of 50-70 years, with a mammogram offered every three years. Although further research is required, it is possible that these scans could serve not only to detect breast cancer, but also as a tool to identify individuals who could benefit from additional treatment or monitoring for CVD. Given that CVD currently contributes to approximately a quarter of all UK deaths [9], having an additional tool to potentially mitigate this and its associated morbidity would be valuable. As research advances it is possible that comparable opportunities may arise with other common incidental findings, leading to increased benefits for patients without additional radiation exposure or significant resource allocation.

Non-maleficence

Non-maleficence is the obligation of a physician not to harm the patient. While some incidental findings can be helpful, many of them constitute an overdiagnosis, that would have never caused any issues for the patient had they not been identified [1]. By identifying and informing patients of non-concerning findings we are often creating anxiety and reducing their quality of life all for no overall benefit [10]. The further investigations that these findings create also come with their own risks, often including increased exposure to radiation and significant pain.

In 2002 an American radiologist, William Casarella, outlined his experience after incidental findings were found on his routine CT colonography. This led to him undergoing further scans, biopsies and ultimately three wedge resections of his right lung. He experienced excruciating pain, anxiety, and significant financial loss all for no overall significant health benefit. He felt that 'what is often missing from radiologists' thoughts is firsthand experience with the clinical drama that follows screening or diagnostic tests' and that 'the only "normal" patient is one who has not yet undergone a complete work-up'. Dr Casarella had become the perfect example of where incidental findings can lead to more harm than good [11].

There is an argument that if doctors blindly order investigations until diagnostic certainty is achieved then we are not using our position of knowledge and guidance to benefit the patient, and there is no reason why this could not be achieved with decision pathways, algorithms, and more recently artificial intelligence. Instead, both referrers and radiologists need to ensure they put findings into the context of the patient before deciding whether to investigate further. There remains a large amount of variation for how different incidental findings are reported and investigated among referrers and radiologists. Standardisation of this across the board would likely lead to better outcomes and less negative consequences for patients [12].

Justice

Justice in healthcare is defined as fair, equitable, and appropriate treatment of persons. Ideally, the decision for additional investigations and management would be unaffected by economic constraints and resource availability. However, our current reality is far from ideal, with healthcare costs rising faster than inflation, particularly in radiology compared to other medical specialties [13].

The investigations created by incidentalomas all come with a financial and time cost. Undoubtedly, some of these costs are warranted and lead to significant benefit to the patient, but as outlined earlier, often result in no change to the overall outcome, delaying care for patients who could have had a greater benefit from these resources. There are potential savings to be made from incidentalomas in some cases, the research showing the link between breast arterial calcification and CVD discussed earlier being a prime example. With CVD currently estimated to incur an annual cost of £19 billion on the UK economy [14], early identification and treatment of at-risk patients could lead to substantial savings.

We must also consider the wider community outside healthcare, especially with the ongoing climate emergency. Overdiagnoses in this context significantly contribute to the NHS's carbon emissions and reducing these while safeguarding patients' quality of care is in everyone's best interest as global warming intensifies [15].

As discussed previously, better standardisation and national guidelines would help guide radiologists and referrers when deciding whether to report and investigate incidentalomas and would ensure that patients are treated equally across the country.

Conclusion

Management of incidental findings within radiology is a complex ethical challenge that requires careful balance between patient autonomy, beneficence, non-maleficence, and justice. As demand for imaging increases and these findings become more common, it becomes increasingly important that we take these challenges into consideration when requesting and reporting scans.

There are steps we can take to reduce the burden of incidental findings on patients and resources, such as increased standardisation and national guidelines, as well as contextualising findings where possible to separate incidentalomas which will require more investigation, and those that can be disregarded. It is of the utmost importance that these measures are implemented carefully however, identification of incidentalomas can lead to life saving diagnoses, and clinicians should not be discouraged from reporting and investigating any findings they are concerned about.

We should ensure that patients are aware of the risk of unexpected abnormalities being found before they are scanned and where appropriate empower them with the knowledge and advice to decide on what they feel the next steps should be. Should radiologists and referrers fail to fulfil this role, effectively contextualising incidental findings and providing

guidance to patients, there is a risk that their work will become increasingly exposed to standardised pathways and artificial intelligence.

Word Count: 1500

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