

Incidental findings; prevention is better than cure

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In this issue of the journal Spierings *et al.* describe the results of bone marrow biopsy after detecting incidental signal alterations of bone marrow on MRI performed for musculoskeletal symptoms without clinical suspicion of a haematological disorder. In 7 out of 15 patients a clinically significant haematological disorder was detected.¹

It is a small study, including only 15 patients, and unfortunately we do not know how many patients in total underwent MRI scanning for musculoskeletal symptoms. But if we assume that incidentally found abnormalities were reported in all patients undergoing an MRI scan, this suggests that once they are detected, bone marrow biopsy is warranted.

Nowadays, incidental findings are becoming more and common with the emergence of sophisticated imaging techniques. Whereas bone marrow alterations might indicate the need for further examination, this may not hold true for other incidentally found abnormalities. As Dr Bluemke in *Circulation* puts it: 'Because of the comprehensive nature of computed tomography (CT) scanning, incidental findings are found seemingly on almost every CT scan performed for a wide variety of reasons in a radiology department.'² For instance, depending on age approximately 5% of people show adrenal nodules on CT scanning.³ On ultrasound, the imaging modality with the highest sensitivity, the prevalence of thyroid nodules is around 30%.⁴ On coronary CT angiography, used to evaluate patients with chest pain, 16% of patients showed pulmonary nodules.⁵

Whether incidental findings need follow-up depends on the presence of underlying risk factors that might increase the a-priori chance of finding significant disease. Surveillance in pulmonary nodules is different in smokers as compared with non-smokers. Nevertheless, the risk of malignancy, or even significant non-malignant disease, in these incidental findings is low, and therefore the benefit of follow-up might not outweigh the costs or the complications associated with the procedures performed.

In the study by Goehler *et al.*, they calculated that the follow-up of incidentally found pulmonary nodules in coronary CT angiography resulted in a relative reduction of lung cancer mortality of 4.6% and an improvement of quality-adjusted life expectancy of no more than seven quality-adjusted life-days:⁵ statistically significant but far from relevant.

In a recent issue in *JAMA Internal Medicine*, Dr Barry eloquently illustrates the downside of sophisticated and extensive imaging, demonstrating the effect of follow-up of incidental findings in one of his patients.⁶ Ignoring incidental findings might lead to legal and ethical implications. But following up all incidental findings will lead to an increase in medical costs and the risk of unnecessary complications. He proposes to mitigate the problem of incidental findings by limiting scans to the body area of interest.

Unfortunately, posh private clinics offer unnecessary check-ups with MRI and CT scans, allegedly intended to give you peace of mind. But whereas some tests may be beneficial, most are not and some can even do harm.

Incidental findings are not restricted to imaging techniques. There is, for instance, much debate on whether and how incidental findings from next generation sequencing in research studies and patient care should be returned to research participants and patients.⁷⁻⁸ The American College of Medical Genetics and Genomics (ACMG) recommends that laboratories performing clinical sequencing seek and report mutations present in a list of specific genes (containing for instance mutations in *BRCA1* and *BRCA2*) and the ordering clinician should discuss with the patient the possibility of incidental findings.⁹

And then there is the issue of incidental findings in routine laboratory analysis performed for no obvious reason. Often, when trainees are asked why they perform certain laboratory analyses, the answer is; ‘just to be certain’. But inadequate laboratory testing is not a problem restricted to trainees. A study in the United States showed that on average 30% of all laboratory tests are probably unnecessary.¹⁰ And although most laboratory analyses are relatively inexpensive, the resulting sequence of additional studies, when finding results falling out of the normal range, might generate substantial costs and in fact leads to uncertainty for both the doctor and patient. As Dr Arnaout states it: ‘In ordering blood tests, we too often tend to be permissive, asking ‘why not?’ instead of ‘why?’’.

In conclusion, incidental findings are a major concern throughout diagnostic medicine. Developing guidelines, as is often done, might help. But overall the best way to deal with incidental findings is probably try to avoid finding them.

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