Excess Diagnosis in Cardiology: the Overdiagnosis Issue

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“Believe only half of what you see and nothing that you hear.”

Edgar Allan Poe

The greater the ability to identify diseases early and accurately by means of growing technological resources, the greater the possibility of interfering with the clinical course of these conditions, thereby reducing morbidity and mortality. This basic axiom guides modern medicine, but it has been challenged by evidence that created a new term in the medical jargon: overdiagnosis.

Overdiagnosis can be considered the diagnosis of a “disease” that will never cause symptoms or death during the life of the patient. In a recent publication, researchers from the Cochrane Centre systematically analyzed 14 publications on check-up tests involving 182,880 participants and concluded that there was no reduction in the rates of mortality and morbidity associated with the check-up and, on the contrary, there was an increase in the number diagnoses and use of medications.

Studies of diagnostic tests for coronary artery disease have been evaluated on the issue of overdiagnosis. In the emergency room setting, computed tomography angiography of the coronary arteries is a tool that can effectively rule out the presence of atheromatosis. However, when atherosclerotic plaques are found in the coronary arteries, coronary artery bypass grafting is very often performed despite the absence of ischemia.

In a recent review article, Radecki addressed the issue of angiography in patients with chest pain in the emergency room citing the studies CT-STAT and ROMICAT II. Both studies demonstrated reduced length of stay in the emergency room and reduction in the emergency room costs. However, there was an increase of up to six times in the rates of coronary artery bypass grafting and 50% in hospital costs after admission to the emergency room. While the use of coronary angiography has little impact on the prognosis of patients there will be significant increase in the rate of coronary artery bypass grafting, whenever this technique reveals the presence of coronary artery disease (CAD). This has been recently highlighted in the study by Douglas et al. comparing the anatomical approach to the functional approach for the diagnosis of CAD in outpatients.

Although the prognosis was similar in both groups, the patients referred for routine computed tomography angiography had 50% more cardiac catheterizations (12.2% vs. 8.1%) and had twice the rate of coronary artery bypass grafting (6.2% vs. 3.2%) compared with patients who were referred for functional tests.

Nuclear medicine scans have been cited as a source of overdiagnosis in cardiology such as in the publication of Le Roux et al., which evaluated the modern SPECT-CT technique, performed in hybrid scintigraphy devices equipped with combined computed tomography scans, where the low-dose computed tomography scan is used to replace ventilation scintigraphy for diagnosing of pulmonary thromboembolism (PTE). In this study, it was observed that the use of CT to replace the ventilation phase entails significant increase in false positive rates. Perfusion and ventilation tests is encouraged for suspected PTE. Although the term overdiagnosis has been employed in this study, it seems that the most correct term is a reduction of technical specificity, since overdiagnosis implies that the disease found is real but, though accurately diagnosed, such diagnosis does not seem to have clinical implications.
Anderson et al. called attention to the fact that computed tomography angiography of the pulmonary arteries identifies up to 50% more cases of pulmonary embolism compared to lung scintigraphy. However, despite more diagnoses and a higher anticoagulation rate, the group that underwent computed tomography angiography did not present lower morbidity or mortality, raising the possibility that some of these patients did not need treatment.

Studies addressing patients in the postoperative period of orthopedic surgeries suggest that the addition of computed tomography angiography to the diagnostic tools for PTE is temporally associated with a higher detection rate and a significant reduction in mortality from this condition, but bleeding complications rates were dramatically increase concomitantly with increased hospitalization time and costs. The authors conclude their manuscript by suggesting the need for further studies to assess the impact of computed tomography angiography in the diagnosis of PTE after orthopedic surgeries. Daniels, in an editorial published in our journal a few years ago, commenting on the use of ultrasensitive troponins for the diagnosis of coronary syndromes, pointed out the need for cardiologists to be aware of the risks of overdiagnosis, which are potential risks when an accurate technique comes to the clinical practice.

Medicine moves at a relentless pace of technological aggregation for the benefit of patients, but the systematic study of clinical evidence is crucial to choose the best ways to incorporate and employ new technologies.

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### References