

Asymptomatic CT Scans: A Health Assessment or a Health Risk?

J Roberts, S Keene

Citation

J Roberts, S Keene. *Asymptomatic CT Scans: A Health Assessment or a Health Risk?*. The Internet Journal of Radiology. 2007 Volume 9 Number 1.

Abstract

The purpose of this article is to expose the hidden dangers of asymptomatic whole body computerized tomography (CT) scans. Once thought to be a safe and proactive healthcare approach, whole body CT scans for asymptomatic patients are hazardous. The majority of these self referred patients do not fit in any health risk categories, thus unknowingly taking potential detrimental risks to their health. This article reveals overlooked truths regarding the associated health risks, such as a false sense of security, unnecessary radiation exposure, and out of pocket expense. This paper demonstrates the health risks with critical analysis of proven, hardcore evidence. Asymptomatic whole body CT scans should not be used as a screening tool for early detection of possible ailments. Despite the good intentions, more harm is often inflicted with these scans.

INTRODUCTION

Imagine using x-ray vision to look deep inside the body for lurking ailments. Now imagine curing the ailment before symptoms become evident. This is the logic supporters use to declare medical relevance of asymptomatic whole body CT scans as a screening tool. However, the supporters fail to convey the magnitude of possible health risks associated with these supposed advantageous screening exams, especially with those patients who are not at increased health risk due to genetic predispositions. Whole body CT scans became popular across the United States as a practical, hands on approach to ward off life altering illnesses. Early detection is the most important benefit proclaimed by proponents for the asymptomatic screenings. Supporters claim lives can be saved from the clutches of disability and disease by discovering ailments before symptoms even begin. As tempting as it may sound, these whole body CT scans do more harm than good. If a screening exam is negative, a false sense of security may prolong medical treatment even if a patient is presenting with symptoms. Insurance does not cover these self referred tests which can cost more than \$1000. Furthermore, if the test shows positive or inconclusive results, more money and time is usually wasted on follow up exams to prove or disprove the scan's original findings. There are no documented studies showing the benefits of these scans out weigh the health risks. Instead, there are numerous studies warning of the dangerous effects produced by this needless screening exam.

LITERATURE REVIEW

In 2001 a new proactive healthcare fad erupted across the United States, whole body CT screenings. Without a physician referral, patients can screen the entire body for looming ailments from aneurysms to cancer (Fenton, 2003). Supporters proclaim early detection and prevention of terminal illnesses while the patient is still asymptomatic, or if nothing is amiss, peace of mind for the worried well (Kolata, 2005). Opponents, on the other hand, declare false sense of security, out of pocket costs, and unnecessary radiation exposure far out weigh potential gains.

Computerized tomography (CT) scans are produced by a series of x-rays that are passed through a patient at hundreds of angles from head to toe in a spiraling fashion. The data collected is then analyzed by a computer to create a series of detailed cross-sectional images. In whole body CT screenings the chest, abdomen, pelvis, and sometimes even the head are scanned (Allan & Williams, 2004).

Proponents of whole-body CT screenings suggest lives can be saved through early detection of potentially serious or deadly illnesses and also would aid in successful treatment and possibly living a longer life. Advertisers for whole-body scans claim to screen for osteoporosis to cancer to heart disease in one visit through a single scan (Kolata, 2005). In addition, the ads also stress that the scans are accurate and meaningful. "Almost all diseases uncovered at asymptomatic stages can be modified, reversed, or cured" (Kolata, 2005).

Contrary, research shows the risks contraindicate the whole body CT screening exam for asymptomatic patients.

A clear diagnosis can rarely be concluded with a single whole-body CT scan, but rather through multiple costly and sometimes invasive follow-up tests. A study by Beinfeld, Gazelle, and Wittenburg (2005) using an analytic model of self-referred asymptomatic patients reported that an average of 908 patients out of 1,000 screened would have at least one false-positive test result requiring further testing. That outcome suggests 90% of the scanned patients will require additional testing to prove or disprove an ailment (Morley, 2005). A separate study found that out of the additional ethically required testing about 80% of the abnormalities found are relatively harmless (Environmental Protection Agency, 2003). Benign nodules, non-cancerous tumors, and scar tissue from past infections can easily be discovered using whole-body scans, but each are generally asymptomatic and discovery does not necessarily warrant treatment (Ullrich, 2004). Suspicious findings can indicate illness, but in most cases the abnormalities are harmless. Regardless, suspicious findings lead to more tests, which can include the use of surgery, drugs, anesthesia and even more radiation (Health Canada, 2006). A 2002 study headed by Dr. Giovanna Casola concluded that of the patients that required additional testing, 10% actually had a malady while only 1% of total patients scanned had a life-threatening condition (Costello & Maugh, 2004). In its statement on whole-body CT, the American College of Radiology expresses similar beliefs (American College of Radiology, 2001, as cited in Berlin, 2002):

“The ACR, at this time, does not believe there is sufficient evidence to justify recommending total body CT screening for patients with no symptoms or a family history suggesting disease. To date, there is no evidence that total body CT screening is cost efficient or effective in prolonging life. In addition, the ACR is concerned this procedure will lead to the discovery of numerous findings that will not ultimately affect patients' health but will result in unnecessary follow-up examinations and treatments and significant wasted expense.”

These self-referred whole-body screenings as well as the required follow-up examinations are expensive. Most private insurance does not cover the initial asymptomatic whole-body CT scan, which can cost more than \$1000. However, it would be responsible for the costs of most follow-up tests and treatments prompted by the CT examination. These added consequential expenses could lead to increased

healthcare costs across the board (Morley, 2005). These nonessential scans not only waste monetary resources, but also squander expensive human and technical resources as well (Health Canada, 2006).

Exposure to unnecessary radiation is cause enough to forgo a self-referred asymptomatic whole-body CT screening examination. It is a proven fact that the patient receives a much larger dose of radiation during a typical CT procedure versus most conventional x-ray imaging procedures (United States Food and Drug Administration, 2005). A whole-body CT scan delivers as much radiation in 10 minutes as about 500 chest x-rays or 4-5 years of exposure to natural (background) radiation (Allan & Williams, 2004). A total radiation dose of about 12 millisieverts is emitted to the patient during a single full-body CT scan. According to radiation biologist David J. Brenner of Columbia University that dose is similar to the radiation received by survivors about one and a half miles away from the atomic bombings of Hiroshima and Nagasaki, Japan (DeNoon, 2004). Thus, it is difficult to justify whole body CT screenings which involve large radiation doses that may be of little benefit to the patient (EPA, 2003).

CONCLUSION

While CT scans are proven to be beneficial in symptomatic patients, they can be hazardous for asymptomatic patients. While the temptation to use x-ray vision to look inside the body may seem appealing, whole body CT screenings predominately not only a waste of time and money, but can also be a substantial health risk. These screening exams give a false sense of security to the public and expose patients to unnecessary levels of ionizing radiation. The risks associated with these screening exams far outweigh any possible benefits. Furthermore, there are no proven studies to demonstrate whole body CT screen will reduce morbidity or mortality in healthy, asymptomatic patients. Self-referred whole body CT scans provide more harm to the patient than benefit.

References

- r-0. Allan, P. & Williams, J. (2004) 'Full-body' CT scans: are they worth the cost in money and radiation exposure? Behind the Medical Headlines. Retrieved January 19, 2008, from <http://www.behindthemedicalheadlines.com/articles>
- r-1. Beinfeld, M., Gazelle, G., & Wittenberg, E. (2005) Cost effectiveness of whole body CT screening. *Radiology*, 234, 415-422.
- r-2. Berlin, L. (2002). Potential legal ramifications of whole-body CT screening: taking a peek into Pandora's box. *American Journal of Roentgenology*. Retrieved January 14, 2008, from <http://www.ajronline.org/cgi/content/full/180/2/317>

- r-3. Costello, D, & Maugh, T. (2004 August 31). More cancer risk seen in full-body CT scans: the radiation from one exam is equal to that in some atomic-bomb survivors. But for the ill, diagnostic benefits outweigh the danger. LA Times. Retrieved January 20, 2008, from <http://www.pqasb.pqarchiver.com/latimes/access/686247651.html>
- r-4. DeNoon, D. (2004). CT scan radiation risks: repeated full-body scans of healthy people may raise cancer risk. CBS News. Retrieved January 20, 2008 from <http://www.cbsnews.com/stories/2004/08/31/health/webmd/main639707.shtml>
- r-5. Environmental Protection Agency. (2003). Information on whole body scanning. Retrieved January 20, 2008, from <http://www.epa/nsw.gov.au/radiation/ctbodyscans.htm>
- r-6. Fenton, J. (2003). Patient self-referral for radiologic screening tests: clinical and ethical concerns. Retrieved January 20, 2008, from <http://www.ncbi.nlm.nih.gov/pubmed>
- Health Canada (2006). It's your health: whole body screening using MRI or CT technology. Retrieved January 14, 2008, from http://www.hc-sc.gc.ca/iyh-vsv/med/mri-irm_e.html
- r-7. Kolata, G. (2005, January 23). Rapid rise and fall for body-scanning clinics. The New York Times. Retrieved January 18, 2008, from <http://www.nytimes.com/2005/01/23/health/23scans.html>
- r-8. Morley, M. (2005). Whole body CT screening costs overshadow benefits. Retrieved January 14, 2008, from http://www.eurekalert.org/pub_releases/2005-01/rson-wcs012105.php
- r-9. Ullrich, D. (2004). Whole body CT scans: not for everyone. Medical College of Wisconsin Healthlink. Retrieved January 18, 2008, from <http://www.healthlink.mcw.edu/article/1031002349.html>
- r-10. United States Food and Drug Administration. (2005). Whole Body Scanning: Using Computed Tomography (CT). Retrieved January 14, 2008, from <http://www.fda.gov/cdrh/ct>

Author Information

Jessica Roberts, RT(R) (CT) (ARRT)

East Tennessee State University

Shane Keene, MBA, RRT-NPS, CPFT, RPSGT

East Tennessee State University