National Trends in Benign Pulmonary Resections

Association With CT and PET Imaging

To the Editor:

Benign pulmonary resections confer unnecessary risk and cost without concomitant benefit.¹ At our institution, in the Bronx, New York, we noted an increase in the proportion of benign granuloma resections after we acquired a PET scanner.² However, our institution has a large HIV clinic and an ethnically diverse patient population, with many immigrants from countries where TB is endemic. We set out to determine the relationship between imaging and benign pulmonary resections on a national level.

We retrospectively identified patients who underwent pulmonary resections between 1993 and 2008 using the Nationwide Inpatient Sample (> 588 million hospitalizations). Those patients who were discharged with diagnoses that could present as a PET scan-avid pulmonary nodule were included in this analysis. Annual CT and PET scan use was derived from IMV (a data source that compiles imaging data). We examined the number of benign pulmonary resections and the proportion of benign resections (benign/total) for the 15-year period from 1993 to 2008, adjusting for annual national adult population estimates.

Pulmonary resections overall increased from 43,000 in 1993 to 51,000 in 2008, and benign pulmonary resections increased from 8,000 to 13,000. The proportion of benign resections increased from 18% in 1993 to 24% in 2001 and remained stable at about 25% from 2002 to 2008 (Fig 1). A linear increase in CT scan use was observed ($r = 0.99$, $P < .001$) during the study period (1993-2008) from about 16 million to almost 62 million CT scans (Fig 2A). Starting in 2001, when data became available, there was a similar linear increase ($r = 0.92$, $P < .001$) in PET scan use from 0.24 million to almost 1.3 million scans (Fig 2B).

Pulmonary resections with a benign diagnosis increased in the United States from 18% of total pulmonary resections in 1993 to 25% in 2008, coinciding with a dramatic increase in CT scan use. The bulk of the increase occurred before 2001, when PET scanning came into broad clinical use³ and subsequently stabilized at one-fourth of all

Figure 1 – Population-adjusted proportion (%) of benign lung resections by year, 1993-2008.

resections from 2002 to 2008. Results of PET scanning may have prevented an ongoing increase in the proportion of benign pulmonary resections or perhaps the stabilization reflects the population prevalence of benign disease. The US Preventive Services Task Force recommendation⁴ supporting CT scan screening for lung cancer, if adopted

Figure 2 – A, Population-adjusted number of CT scans (millions) by year, 1993-2008. B, Population-adjusted number of PET scans (millions) by year, 2001-2008.

into clinical practice, will result in the identification of many lung nodules. Further investigation is urgently needed to define whether additional imaging or biomarker diagnostics⁵ could help reduce the undesirably high proportion of benign pulmonary resections.

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