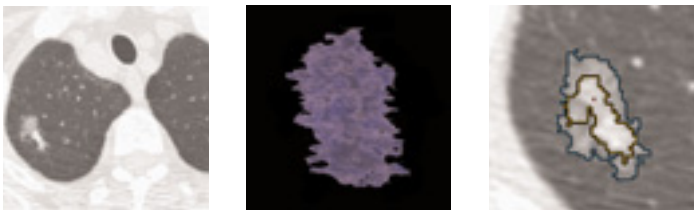
GE Healthcare



Lung VCAR clinical case study

Nodule management: non-solid changes to part-solid

Monitoring characteristic changes of a pure GGO over time

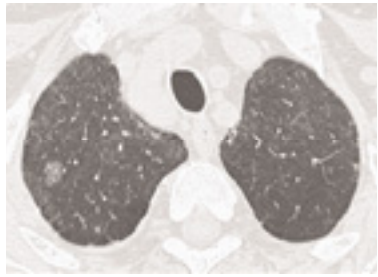
Dr. Marie-Pierre Revel
Radiologist
Hopital Pompidou
Paris, France

History

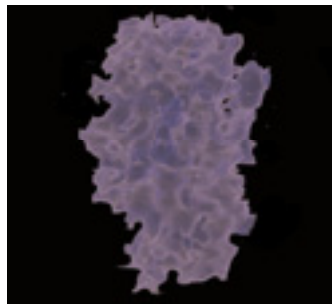
74-year-old male with 80-pack year history of smoking.

A pure Ground Glass Opacity (GGO) was found during a CT examination that was performed for suspicion of pulmonary embolism.

Exam 1: Nov 14, 2000



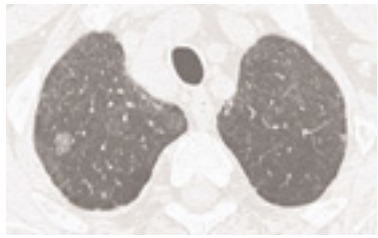
Axial



Segment

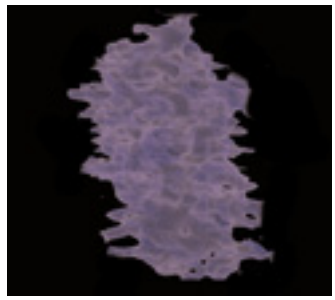
Exam 2: April 3, 2001

There was no obvious change of the nodule on CT scan follow up for 2001 and 2002. Because the nodule was stable and the patient suffered from severe heart disease, he was not referred for surgery.



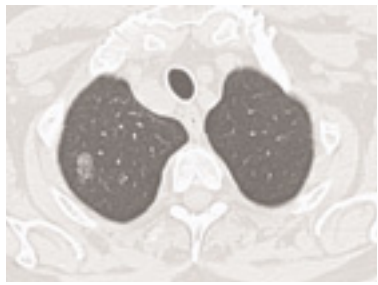
Axial

Scan interval: 4 months 19 days



Segmant

Exam 3: April 17, 2002

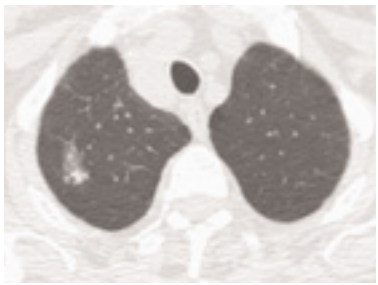


Axial

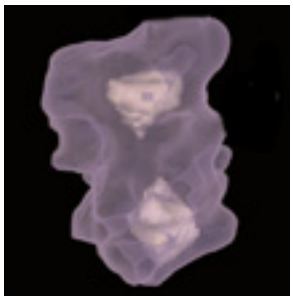
Exam 4: March 19, 2003

The Lung VCAR™ software is used for a comparative evaluation of the GGO nodule. From year 2001 to 2003, the software measured a 150 percent volume growth and a 650 day doubling time for the non-solid portion of the nodule. The solid component detected, represents 3 percent of the nodule area and has a volume of 97mm³. This value for doubling time is within the range of doubling time values for non-solid nodules as reported by Hasegawa et al.[1]

Exam date	2002-11-14	2003-03-19
Slice index	6	37
Calcification	No	No
Density	Non-solid	Partial-solid
Shape		Non-round
Surface		Lobulated
Severity	Probably suspicious	Probably suspicious
L-R/A-P/I-S	14.1mm/19.6mm/17.5mm	18.3mm/26.4mm/19.4mm
Volume	610mm³	Non-solid 1,422cm³ Solid 97mm³ total 1,519cm³
Days growth		855 d
% growth		149%
Doubling time		650 days



Axial

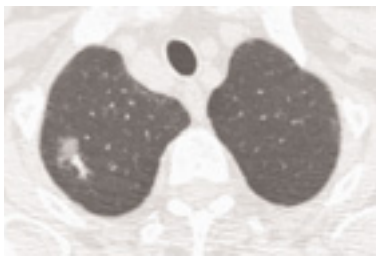


Segmant

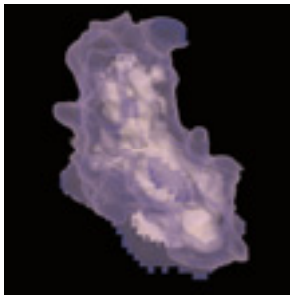
Scan interval: 4 months 19 days

Exam 5: May 5, 2004

Follow-up nodule assessment revealed growth of the posterior solid component which led to surgical resection. The Volume of the solid component grew from 97mm³ to 1.072mm³ with a doubling time of 119 days.



Axial



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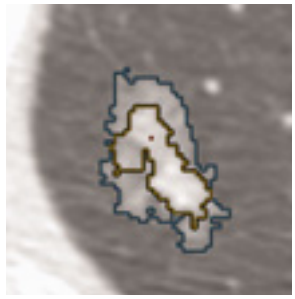

Contour

Surgical and pathology report
Stage 1 CA
Mixed adenocarcinoma: bronchioalveslar and acinar components

Reference:

[1] M Hasegawa, MD, S Sone, MD, S Takashima, MD, F Li, MD, Z-G Yang, MD, Y Maruyama, MD and T Watanabe, MD. Growth rate of small lung cancers detected on mass CT screening – *The British Journal of Radiology*, 73 (2000), 1252±1259 E 2000

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