proliferation (p = 0.0043) compared with LRIG1-negative cells. Similarly, LRIG1-expressing human airway basal cells isolated from endobronchial brush biopsy samples exhibit increased colony-forming capacity (p = 0.0469). Topical application of NTCU to mice recapitulates the development of human pre-invasive and SCLC lesions after 23 weeks. Results show lesions in LRIG1-KO mice to be larger than those of WT animals. Knock down of LRIG1 in cultured human airway basal cells alters cell phenotype, leading to an increased colony-forming efficiency and greater proliferation at cell confluence.

**Conclusions** LRIG1 has an important role in stem cell homeostasis of the human and murine airway epithelium. Loss of LRIG1 promotes pre-cancerous lesion development in a murine SqCLC mouse model and behaviour of human epithelial cells in culture, indicating a potential target for chemoprevention of SqCLC in humans.

---

**INVESTIGATION OF VESSEL STRUCTURE IN THE VICINITY OF LUNG TUMOURS**

N Sadri, D Wertheim, Kingston University, Kingston, Surrey, UK

10.1136/thoraxjnl-2016-209333.16

Lung cancer is considered a major cause of cancer death.1 We are currently developing methods for detection of vessels in lung CT images. The aim of this study was to investigate the number of vessels in areas of unilateral lung tumours and compare with the equivalent contralateral lung with no tumour. Lung CT images were downloaded from the Cancer Imaging Archive wiki.cancerimagingarchive.net/display/Public/LungCT-Diagnosis.2 Software was written in MATLAB (The MathWorks Inc., USA) in order to display and analyse the DICOM images. Windowing was performed manually in order to clearly display the tumours as well as surrounding vessel like structures. Using the software eight sets of images were analysed; the number of clearly defined vessel like structures directly attached to the tumour were counted and compared with the corresponding region in the contralateral lung with no evidence of tumour; small vessel like structure and branches were not included. The area of the tumour was manually delineated and calculated in terms of pixels. For each set of CT images, one image was used where the tumour size was greatest. In all eight cases the number of clear vessel like structures in the immediate vicinity of the tumour was greater than that in the corresponding area on the contralateral side, mean (standard deviation) of the difference 5 (1.6), there was a significant difference (p < 0.001 (one sample t test). In addition vessel like structures often appeared brighter on the side of the tumour. The results of this pilot study suggest that the number of clear bright vessel like structures in the immediate vicinity of a lung tumour may be higher than in the corresponding area on the contralateral side. We feel this research merits further study in order to investigate if this approach may help enable early detection of lung tumours.

**REFERENCES**
