European Respiratory Society
Annual Congress 2013

Abstract Number: 4968

Publication Number: P3110

Abstract Group: 11.1. Lung Cancer

Keyword 1: Lung cancer / Oncology **Keyword 2:** Cell biology **Keyword 3:** Molecular pathology

Title: Aromatase inhibition alters the mechanical properties of non small-cell lung cancer cells affecting cell movement

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Body: Introduction A critical step during invasion and metastasis is the ability of cancer cells to move. Cell stiffness is important in their transmigration through a basement membrane [1]. The correlation between cancer cell mechanical properties and movement has not been determined. Estrogen signaling is critical in the progression of malignancies expressing estrogen receptors and may also be involved in the pathogenesis of NSCLC [2]. Aromatase catalyses the final step in estrogen synthesis locally in tissues. Exemestane (EXE) is an aromatase inhibitor. Methods NSCLC cell lines H23 and A549 were used. Cell movement was determined with boyden chamber assay. With a micropipette method we applied negative pressure on individual cells through the pipette and we measured the cell stiffness and the elastic shear modulus (ESM) prior and after their treatment with EXE [3]. Results ESM of the untreated A549 and H23 was 480.0 ± 237.23Pa and 159.10 ± 62.10Pa, respectively. 24 hours after cell treatment with EXE, ESM was 269.87 ± 43.0Pa and 125.0 ± 65.05Pa, respectively. Cell treatment with EXE reduced H23 (36.7% ± 12.4) but did not affect A549 movement. Discussion Both cell lines had different ESM and reduced their stiffness after treatment with EXE. The cells with the higher ESM were resistant to EXE regarding movement implying that lower stiffness might render cells more sensitive to movement inhibition. However, the reduced ESM by EXE in A549 was not associated with alterations in cell movement. The project is ongoing. References 1.V.Swaminathan et al,CancerRes71,1-6,2011. 2.L.P.Stabile et al,CancerRes 65,1459-70,2005 3.C.T.Lim et al, J Biomech, 39:195-216, 2006.