December 2013 Arizona Thoracic Society Notes

A breakfast meeting of the Arizona Thoracic Society and the Tucson winter lung series was held on Saturday, 12/14/2013 at Kiewit Auditorium on the University of Arizona Medical Center Campus beginning at 8:30 AM. There were 31 in attendance.

A lecture was presented by Joe G. N. "Skip" Garcia, MD, the senior vice president for health sciences at the University of Arizona (Figure 1).

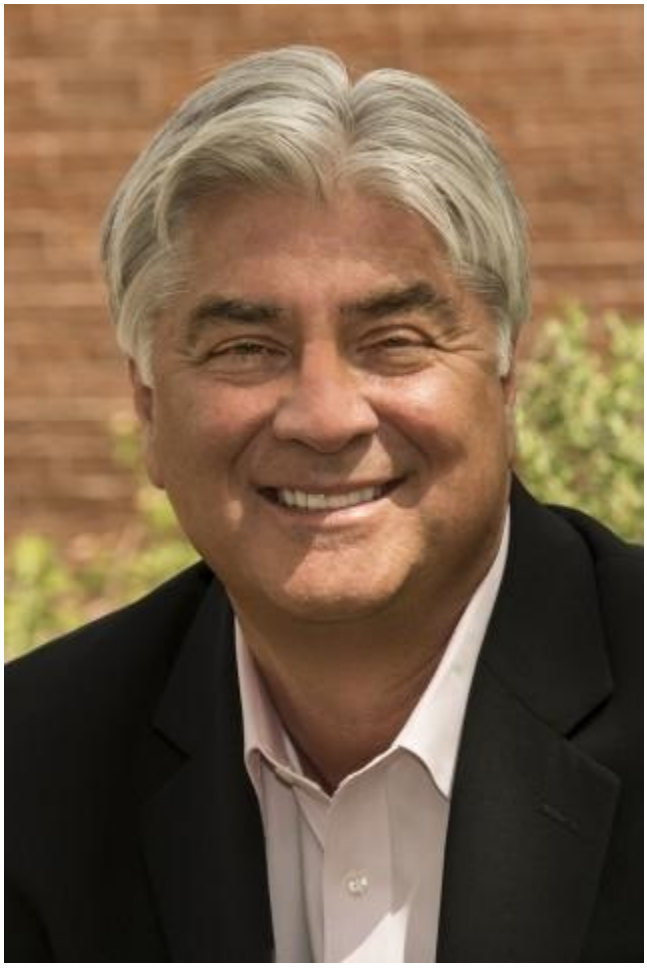

Figure 1. Joe G. N. “Skip” Garcia, MD

The title of Garcia’s talk was “Personalizing Medicine in Cardiopulmonary Disorders: The Post ACA Landscape”.

Garcia began with reiterating that the Affordable Care Act (ACA, Obamacare) is fact and could pose a threat to academic medical centers. However, he views the ACA as an opportunity to develop personalized medicine which grew from the human genome project. Examples cited included the genetic variability among

patients in determining the dose of warfarin and bronchodilator response to beta agonists in asthma (1,2).

Garcia's laboratory has studied predominately 6 diseases including the adult respiratory distress syndrome (ARDS), idiopathic pulmonary fibrosis (IPF), sarcoidosis, asthma, pulmonary artery hypertension and sickle cell disease. Each has in common that there has been minimal progress made in the past generation and each has been shown to have racial or ethnic disparities in outcomes. He cited examples of how molecular testing could improve care.

Black and Hispanic patients with ARDS have a significantly higher risk of death compared with white patients (3). Garcia noted that the ventilator is not necessarily a friend and use of higher tidal volumes has been associated with increased mortality (4). He reasoned that the variation in susceptibility to ventilator induced lung injury could potentially explain the racial differences in mortality. Beginning with a dog model of ARDS, highly significant regional differences in gene expression were observed between lung apex/base regions. One of these potential targets was pre-B-cell colony enhancing factor (PBEF), a gene not previously associated with lung pathophysiology (5). Further work showed PBEF could induce changes seen in ARDS including a neutrophil alveolitis and increases in nuclear factor-κβ (NFKB) expression (6).

Few would question that there is a need for validated biomarkers in idiopathic pulmonary fibrosis. Using a similar approach to the investigation of PBEF in ARDS, peripheral blood mononuclear cell (PBMC) gene expression profiles predictive of poor outcomes in idiopathic pulmonary fibrosis (IPF) were examined by microarray. Microarray analyses suggest that 4 genes (CD28, ICOS, LCK, and ITK) are potential outcome biomarkers in IPF and should be further evaluated for patient prioritization for lung transplantation and stratification in drug studies (7). PBMC gene expression profiles were also examined in sarcoidosis. There was a significant association of single nucleotide polymorphisms (SNPs) in signature genes with sarcoidosis susceptibility and severity (8). Further examples were presented on sickle cell disease.

Garcia concluded that molecular techniques represent powerful tools to investigate potential therapeutic approaches in respiratory diseases where little progress has been made.

Richard A. Robbins, MD

References

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