ATS 2023 Highlights

Respiratory Structure and Function Early Career Professionals

Marrissa J McIntosh, PhD

(she/her)

Postdoctoral Research Scholar

Department of Radiology, University of Iowa

@MarissaMcInto1

Get to know members of the RSF Assembly

Is your research clinical, basic science or translational?

Clinical and translational

Tell us about your research?

My main research focus has been to develop and apply image analysis software tools to evaluate biologic therapy response in patients with poorly controlled eosinophilic asthma using hyperpolarized gas MRI and non-contrast CT. There are currently six biologic therapies on the market for the treatment of eosinophilic asthma - by understanding how each biologic therapy affects pulmonary airway and vascular abnormalities in these patients may help guide therapeutic management of this difficult-to-treat population.

Where do you see yourself in 5 years?

I will continue my multi-modality imaging research, exploiting both hyperpolarized ^{129}Xe MRI and x-ray CT to understand disease progression and therapeutic response in chronic lung disease patients.

What do you find is the major benefit of RSF Assembly Membership?

The RSF Assembly provides opportunities for graduate students and early career professionals to network with established scientists and clinicians who share similar research interests, through ATS abstract scholarships and assembly meetings held during the ATS International Conference. RSF Assembly fosters important relationships that help build the foundation for a successful career in clinical research!

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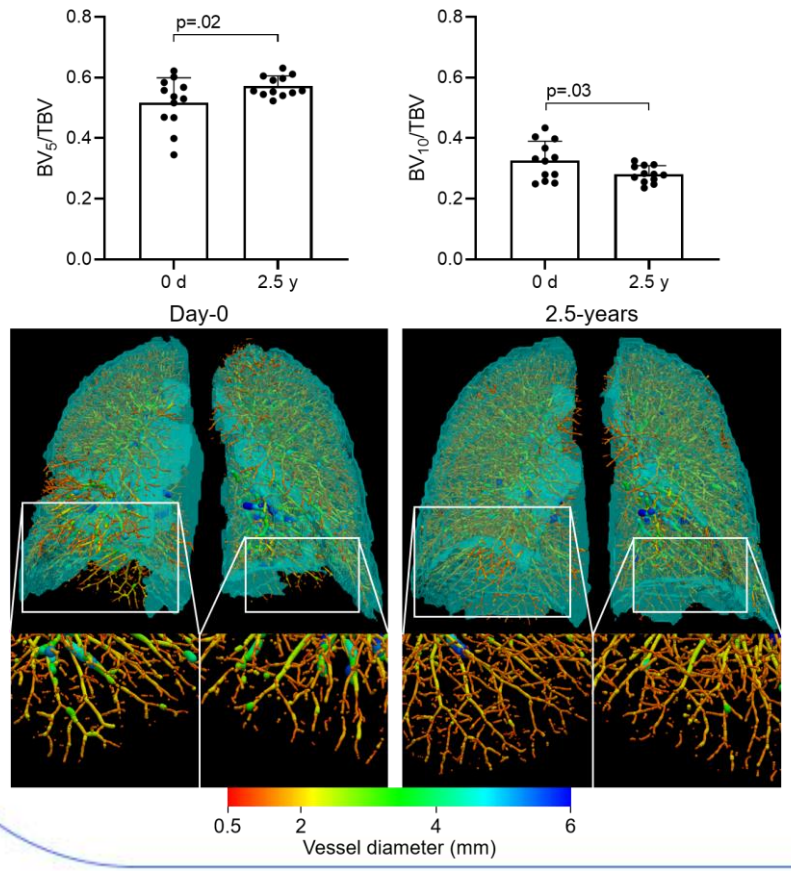

Pulmonary Vascular Redistribution following 2.5-years anti-IL-5Rα treatment in Eosinophilic Asthma

Objective: Chest CT investigations from the Severe Asthma Research Program revealed pulmonary vascular remodelling in asthma, which were linked to abnormal systemic and airway eosinophilia and poor asthma control. We aimed to evaluate CT vascular measurements in eosinophilic asthma participants prior to anti-IL-5Rα initiation and following 2.5-years of continuous treatment.

Methods: We used Chest Imaging platform to measure total (TBV), small vessel (BV_5) and large vessel (BV_{10}) blood volumes in 12 participants with eosinophilic asthma just prior to and after 2.5-years of continuous anti-IL-5Rα treatment, and compared with 42 healthy controls. Differences were evaluated using paired or independent samples t-tests.

Results: In eosinophilic asthma, as compared to Day-0, small vessel and large vessel volumes improved after 2.5 years. In eosinophilic asthma, as compared to healthy controls, small vessel and large vessel volume were worse at Day-0, but not different at 2.5-years. The change in small vessel volume after 2.5-years in eosinophilic asthma was related to pre-treatment MRI ventilation defect percent.

Conclusions: CT small vessel volume was worse in eosinophilic asthma than healthy, elderly never-smokers at baseline, but improved in eosinophilic asthma and was similar to measurements in healthy controls following 2.5-years of continuous anti-IL-5Rα treatment.

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