Att. D.4

LUNG SKIN WORKSHOP
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Investigators: D Linn Holness (PI), Irena Kudla, Gary Liss, Jim Purdham, Jeremy Scott, Frances Silverman, Susan Tarlo

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BAKGROUND

Many allergens in the workplace continue to cause both occupational allergic contact dermatitis (OACD) and occupational allergic asthma (OAA). Often, the same chemical may cause OAA in one worker and OACD in another. In order to prevent occupational allergic skin or lung disease we need to understand both the host factors and environmental factors that lead to their development. Traditionally, research related to OACD and OAA has been done in organ system silos, with the work focusing on either lung disease or skin disease, but rarely the two together.

OBJECTIVE

The goal was to hold a workshop that brought together researchers who have experience in the host and environmental components of OACD and OAA and in particular, those who have considered the two organ systems together, either from a mechanistic or response perspective, to elucidate the set of questions that need to be addressed in future work and develop collaborations between researchers who have not worked together previously to pursue these questions.

METHODS

A two day event was held On November 4th, a group of 58 attended six presentations and on Nov 5th a smaller group of 18 researchers and clinicians discussed the issues and identified key research areas for further work.

PRESENTATIONS

Dr Ian Kimber, a toxicologist from Syngenta Research, UK discussed basic mechanisms, focusing on respiratory sensitization through dermal exposure. Dr John Cherrie, an industrial hygienist from the Institute of Occupational Medicine, Edinburgh discussed dermal exposure models and concluded that having a conceptual model is useful as a guide to research and in determining what data should be collected during exposure monitoring and that inhalation and dermal exposures are associated. Dr Mark Boeniger, an industrial hygienist recently retired from NIOSH, focused on the important role of the skin as a route of exposure for potential respiratory disease. Dr Benoit Nemery, a respirologist/toxicologist/occupational medicine physician from K U Leuven in Belgium, presented clinical examples and described the similarities and differences between occupational lung and skin disease. Dr Carrie Redlich, respirologist/occupational medicine physician from Yale shared her experience from the SPRAY study, a large field study examining both lung and skin routes of exposure and effects in auto body workers. Finally, Dr Denis Sasseville, a dermatologist from McGill, provided information on the North American Contact Dermatitis Group, a group of 15 dermatologists who pool clinical data on patch testing.

The Saturday workshop included the presenters, investigators, AllerGen investigators from Theme II, III and V and in addition, key clinical dermatologists who see occupational skin disease in Canada. The discussion between the researchers and clinicians was extremely valuable in understanding the complimentary perspectives that

each group brings to the table. A number of new collaborative opportunities were identified. Possible research questions were discussed in the three broad areas of mechanistic, exposure and clinical studies. A summary of key questions follow. *Mechanistic research*

$ Define the role played by dendritic cells in the development of qualitatively divergent immune responses to chemical allergens.

$ Further work on animal models for chemically induced asthma with good asthma phenotype to assess mechanisms of sensitization and elicitation.

Mechanistic/Clinical research

$ Using a selected common contact allergen, explore whether there are polymorphisms that impact on inter-individual differences in susceptibility to skin sensitization.

Mechanistic/Exposure research

$ Investigate whether it is possible to define the route of sensitization in proven cases of chemical respiratory allergy/occupational asthma by phenotypic characterization of allergen-specific T lymphocytes. That is, for instance, do allergen-specific T lymphocytes express CLA (skin-homing receptor) inclusive of cutaneous sensitization. This would specifically address whether and to what extent respiratory allergy to chemicals might result from dermal contact.

Exposure research

$ Consider how best to exploit longitudinal antibody (IgG) measurements as a means of monitoring immunologically-relevant levels of exposure.

$ Assess potential for dermal exposure in real working conditions

Clinical/Epidemiological research

$ Conduct a detailed systematic review of the extent to which there is good clinical evidence for a defined panel of respiratory allergens to cause allergic contact dermatitis. Chemicals to be investigated: Acid anhydrides (trimelittic anhydride, phthalic anhydride), Diisocyanates (diphenylmethane diisocyanate, hexamethylene diisocyanate).

$ prospective study of respiratory status in individuals with well documented allergic contact dermatitis and vice versa

SUMMARY

The workshop realized its goals of bringing together researchers and clinicians with an interest in occupational allergic lung and skin disease who could develop new collaborations. There was tremendous value in bringing the research knowledge and clinical experience together to identify new opportunities for research in the clinical setting to help address these research questions. It confirmed both the interest and the challenge of doing research both across disciplines and across body systems. The presenters came, in part, because it provided an opportunity to discuss cross body system problems that traditional scientific meetings that are system focused do not provide.

The investigators have met and, in collaboration with some workshop participants, are developing research proposals to address, mechanisms/animal models, clinical studies examining both lung and skin exposures and effects and utilizing available datasets to explore further the lung skin interface

We would encourage AllerGen to continue to pursue both occupationally related research and also research on allergic disease that spans multiple systems. These topics

have potential to cut across most of or all of the AllerGen themes.