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Adding Up to a Real Crisis

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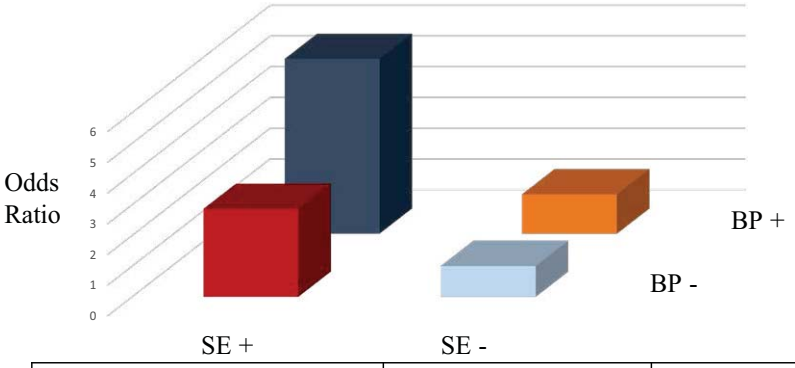
(VARA) Registry were mailed surveys assessing occupational, agricultural, and military inhalant exposures. Demographics, disease activity, functional status, and extra-articular features were obtained from the VARA registry database. HLA-DRB1 shared epitope (SE) status, anti-CCP antibodies, and rheumatoid factor (RF) were measured using banked serum from VARA enrollment. Cross sectional associations between inhalant exposures and RA-related factors were assessed using multivariable linear and logistic regression models adjusting for age, sex, race, and tobacco use and stratified by SE status.

Results: In total, 797 of 1566 participants returned questionnaires (50.9%). Responders were older, white, males, less frequent smokers, with better disease activity and functional status. Multiple inhalant exposures were associated with lung disease but not RF or disease activity. Burn pit exposure was significantly associated with anti-CCP positivity (OR 1.66, 95% CI 1.02-2.69). In models examining combined burn pit exposure and SE status, those with both risk factors demonstrated a substantially higher risk of anti-CCP positivity (OR 5.69, 95% CI 2.73-11.87) (Figure 1).

Conclusion: Burn pit exposure was associated with anti-CCP antibodies, particularly among those positive for HLA-DRB1 SE. These findings are consistent with emerging evidence that various inhalant exposures influence autoantibody expression and RA risk.



Exposure	Anti-CCP + / Total	Odds ratio & 95% CI for anti-CCP +
Neither SE or Burn Pit	110/187 (58.8)	Referent
SE Alone	316/394 (80.2)	2.86 (1.92-4.26)
Burn Pit Alone	21/32 (65.6)	1.28 (0.58-2.86)
SE & Burn Pit	83/93 (89.3)	5.69 (2.73-11.87)
Odds ratios were adjusted for age, sex, race, and tobacco use		

Figure 1. Gene-environment interaction of shared epitope (SE) and burn pit (BP) exposure.

Results: From analyses stratified by SE status demonstrated a gene-environment interaction between SE alleles and military burn pit exposure on anti-CCP antibodies. When stratified by SE status, the association between military burn pits and anti-CCP positivity was limited to those with the SE. The combination of burn pit exposure and the SE allele had a stronger association with anti-CCP positivity than either risk factor in isolation.

Abbreviations: anti-CCP; cyclic-citrullinated peptide antibody; BP, burn pit; CI, confidence interval; SE, shared epitope. ■

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Adding Up to a Real Crisis

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Program: Family Medicine

Type: Case Report

Background: Addison's disease is an autoimmune destruction of the adrenals resulting in reduced glucocorticoid and mineralocorticoid production. During times of physiologic stress, insufficient replacement of these steroid hormones may precipitate a life-threatening adrenal crisis characterized by circulatory collapse and electrolyte abnormalities. Unfortunately, no formal guidelines currently exist for steroid adjustments in athletes.

Methods: Physical Exam

Results: A 14 y/o M with Addison's disease presented for a preparticipation physical evaluation (PPE) for football. Patient managed with BID Hydrocortisone and daily Fludrocortisone. Denied symptoms of adrenal insufficiency including salt cravings, fatigability, muscle aches, orthostasis or polyuria. No prior crises. Patient had never stress-dosed his steroids for athletics. Family desired strategies to minimize risks of participation. Physical exam, vitals, and CMP were normal aside from diffuse skin hyperpigmentation. It was determined he was on an adequate steroid regimen, an action plan for crisis was finalized, and he was educated on preventative strategies. At follow up, patient had completed football season without complications.

Conclusion: Addisonian athletes should be co-managed with Endocrinology and on a physiologic steroid regimen with TID or BID Hydrocortisone and daily Fludrocortisone. Prophylactic stress-doses of Hydrocortisone may be considered prior to athletic activity, especially if experiencing any symptoms of adrenal insufficiency, and should be strongly considered after injury. Early signs of crisis are often nonspecific, such as vomiting, abdominal pain, dizziness and muscle weakness. Immediate access to Solu-Medrol and emergency transportation may be lifesaving in the event of a crisis. To mitigate risk, athletes should also be coached on the importance of adequate hydration and electrolyte replacement. ■

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