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Title: Prevalence of beryllium sensitization in patients diagnosed with sarcoidosis

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Body: Occupational exposure to beryllium (Be) may lead to development of Be-specific CD4+ T-cell immune response and occurrence of a granulomatous disorder called chronic beryllium disease (CBD). Due to similar clinical pictures, CBD may be misdiagnosed as sarcoidosis if Be exposure (BeE) and Be sensitization (BeS) are not looked for. To determine whether some patients diagnosed as sarcoidosis may have undetected CBD, we screened a retrospective cohort of patients with sarcoidosis for BeE and BeS. BeE was assessed through a self-administered questionnaire and a standardized occupational health interview. BeS was assessed using CFSE flow cytometry developed as an alternative to the classical Be lymphocyte proliferation test (BeLPT). 159 patients recorded in a Swiss interstitial lung disease registry with a diagnosis of sarcoidosis were enrolled through their pulmonary physician and received a screening questionnaire. 68 filled questionnaires were returned. 28/68 patients had positive screening. 24/28 underwent an occupational health interview. BeE was considered probable in 6/24 and possible in 18/24. Using CFSE flow cytometry, BeS was detected in 7/24 of these patients (4/6 with probable BeE and 3/18 with possible BeE). BeS testing by CFSE flow cytometry was positive in 5/6 controls with proven CBD and positive BeLPT, and negative in 10 healthy subjects. Conclusions: the minimal rate of BeE and BeS in an unselected population of patients with sarcoidosis was 7/159 (4.4%), suggesting misdiagnosed CBD. A screening questionnaire could help to detect BeE in patients diagnosed with sarcoidosis, and prompt investigations in search of CBD. CFSE flow cytometry may be an alternative to BeLPT to document BeS.