Abstract

For describing bronchial responsiveness, it has been suggested that the dose-response slope (DRS), which is the linear slope of the dose-response curve, is a more useful measure of severity than the provoking dose that causes a 20% fall in FEV1 (PD20FEV1). To determine the distribution of DRS measurements and their relation to respiratory illness in adults, we have reanalyzed data collected in 1981 from a random sample of the population of Busselton, Western Australia. We measured bronchial responsiveness to histamine by the rapid method and atopy by skin prick tests to 15 common allergens. Satisfactory bronchial challenge data were recorded for 858 subjects. Subjects were classified as having asthma symptoms by self-reported history or as having chronic airflow limitation by abnormality of lung function. In normal subjects, DRS values were symmetrically distributed on a logarithmic scale so that a value that represented abnormal responsiveness could be calculated. The dose-response slope had a significant independent association with past and current asthma symptoms, smoking history, sex, atopy, and FEV1/FVC ratio but not with chronic airflow limitation. In subjects in whom a PD20FEV1 could not be measured, the DRS had a significant relation to asthma symptoms, smoking history, and FEV1/FVC. Thus, DRS values, which could be obtained for most subjects, contributed additional information to PD20FEV1 values and discriminated more accurately between groups classified according to respiratory history. These data confirm that DRS values should be used in preference to PD20FEV1 values for describing the severity of bronchial responsiveness in populations.