

## ABSTRAK

**Pendahuluan:** Bisinosis adalah masalah pernapasan kronis yang berkaitan dengan pekerjaan. Paparan debu kapas dalam industri tekstil menyebabkan masalah paru dengan konsekuensi yang cukup besar. Keberadaan inhalan mampu mengaktivasi sistem imun, salah satunya eosinofil. Aktivasi eosinofil dapat menyebabkan bronkokonstriksi, sehingga menyebabkan berbagai gejala pernafasan.

**Tujuan:** Penelitian ini bertujuan untuk menganalisis hubungan antara kadar eosinofil serum dengan derajat keparahan bisinosis yang dinilai berdasarkan kriteria *Schiling* pada pekerja pabrik tekstil.

**Metode:** Penelitian *cross sectional* melibatkan 38 pekerja terdiagnosis bisinosis yang dilakukan selama 1 Minggu dibulan September 2024 di pabrik tekstil Kota Pekalongan. Evaluasi dilakukan pada kadar eosinofil serum perifer dan derajat keparahan bisinosis yang diukur berdasarkan variabilitas gejala dan nilai *forced expiratory volume 1s* (FEV1) spirometer. Analisis dilakukan menggunakan uji Kruskal-Wallis, Mann Whitney U dan Fisher exact. Hasil signifikan  $p < 0.05$ .

**Hasil:** Pekerja pabrik tekstil yang terdiagnosis bisinosis memiliki rerata kadar eosinofil serum  $283.68 \pm 154.94$  sel. Evaluasi mendapatkan 27 subjek (71 %) memiliki bisinosis derajat 1-2 dan 11 subjek (29%) memiliki bisinosis derajat 3. Kadar eosinofil secara signifikan lebih tinggi pada subjek bisinosis derajat 3 dibandingkan bisinosis derajat 1-2 ( $376.36 \pm 192.83$  sel vs  $245.93 \pm 121.44$  sel;  $p=0.042$ ). Nilai *cut off* eosinofil  $\geq 275$  sel memiliki sensitivitas 72.7% dan spesifisitas 67% sebagai prediktor bisinosis derajat 3. Subjek dengan kadar eosinofil serum  $\geq 275$  sel memiliki risiko 5.3x (OR 5.33; CI95% 1.13-25.11) lebih tinggi untuk mengalami bisinosis derajat 3 dibandingkan subjek dengan kadar eosinofil serum  $< 275$  sel.

**Simpulan:** Terdapat hubungan antara kadar eosinofil serum dengan derajat keparahan bisinosis yang dinilai berdasarkan kriteria *Schiling*.

**Kata kunci:** bisinosis, debu kapas, eosinofil serum, pekerja industri tekstil

## ABSTRACT

**Introduction:** Byssinosis is a chronic respiratory problem related to work. Exposure to cotton dust in the textile industry causes lung problems with significant consequences. The presence of inhalants can activate the immune system, one of which is eosinophils. Eosinophil activation can cause bronchoconstriction, resulting in various respiratory symptoms.

**Objective:** This study aims to analyze the relationship between blood eosinophil levels and the severity of byssinosis assessed based on the Schilling criteria in textile factory workers.

**Methods:** A cross-sectional study involving 38 workers diagnosed with byssinosis was conducted for 1 week in September 2024 in a textile factory in Pekalongan City. Evaluation was carried out on peripheral blood eosinophil levels and the severity of byssinosis as measured based on symptom variability and forced expiratory volume 1s (FEV1) spirometer values. The analysis was carried out using the Kruskal-Wallis, Mann Whitney U and Fisher exact tests. Significant results  $p < 0.05$ .

**Results:** Textile factory workers diagnosed with byssinosis had a mean eosinophil serum level of  $283.68 \pm 154.94$  cells. Evaluation found that 27 subjects (71%) had grade 1-2 byssinosis and 11 subjects (29%) had grade 3 byssinosis. Eosinophil levels were significantly higher in subjects with grade 3 byssinosis compared to grade 1-2 byssinosis ( $376.36 \pm 192.83$  cells vs  $245.93 \pm 121.44$  cells;  $p=0.042$ ). The cut off value of eosinophils  $>275$  cells has a sensitivity of 72.7% and a specificity of 67% as a predictor of grade 3 byssinosis. Subjects with serum eosinophil levels  $>275$  cells have a 5.3x (OR 5.33; CI95% 1.13-25.11) higher risk of experiencing grade 3 byssinosis compared to subjects with serum eosinophil levels  $<275$  cells.

**Conclusion:** There is a correlation between serum eosinophil levels and the severity of byssinosis, assessed based on Schilling's criteria.

**Keywords:** serum eosinophils, byssinosis, cotton dust, textile industry workers