



## ACCURACY OF NEUTROPHIL LIMPHOCYTE RATIO FOR DIAGNOSIS OF PEDIATRICS APPENDICITIS

### ABSTRACT

**Background:** Acute appendicitis is the most usual of pediatrics acute abdomen, incidence is 10%, most in boys (1.4: 1). Many studies use of biomarkers to diagnose appendicitis, such as leukocyte count, neutrophil, CRP. But there is still no accurate diagnostic tools, especially in the early phase of appendicitis. This study aims to assess the accuracy of neutrophil lymphocyte ratio (N/L) in diagnosis of pediatrics appendicitis.

**Methods:** This case control study compared 121 operative pediatric appendicitis with operative and nonoperative intussusception patients as controls in the periode of January 2013 - December 2017. Leukocyte count, neutrophil, and N/L values were compared between appendicitis and control groups and between simple and complicated appendicitis. Data analyzed with SPSS, sensitivity and specificity were calculated by ROC analysis..

**Results:** Most of the appendicitis patients in Dr. Sardjito Hospital were 5-10 years old (50%), which is male (56%). The average of leukocyte count increased  $14.33 \pm 6.56 \times 10^3 / \mu\text{l}$  and neutrophil level  $76.16 \pm 14.41\%$  (27-93.2%). N/L in appendicitis compared with non appendicitis had sensitivity value 83,5%, Specificity 57.7%, PPV 81.4%, NPV 61.2%, OR 6.89 with cut off point 2.87. N/L in patients with simple and complicated appendicitis have sensitivity value 84,6%, specificity 56,2%, PPV 35,5%, NPV 92,9%, OR 7,15 with cut off point 6,59.

**Conclusion:** N/L of pediatrics appendicitis compared with non appendicitis had cut off point 2,87. N/L simple and complicated appendicitis patients had cut off point 6,59.

**Keywords:** Pediatrics appendicitis; simple; complicated; neutrophil limphocyte ratio; diagnostic tools



## AKURASI RASIO NEUTROFIL LIMFOSIT DALAM DIAGNOSIS APENDISITIS ANAK

### ABSTRAK

**Latar Belakang :** Apendisitis akut merupakan kasus akut abdomen anak terbanyak, insidensi mencapai 10%, terbanyak pada laki-laki (1,4:1). Banyak penelitian penggunaan biomarker dalam penegakan diagnosis apendisitis, seperti angka leukosit, neutrofil, CRP. Namun masih belum ada perasat diagnostik yang akurat, terutama pada fase awal apendisitis. Penelitian ini bertujuan untuk menilai akurasi N/L dalam diagnosis apendisitis anak.

**Metode :** Penelitian *case control* ini membandingkan 121 pasien apendisitis yang dilakukan operasi dengan 49 pasien intususepsi yang rawat inap baik operatif maupun non operatif sebagai kontrol pada periode Januari 2013 - Desember 2017. Nilai leukosit, neutrofil, dan N/L dibandingkan antar kelompok apendisitis dan kontrol serta antara apendisitis simpel dan komplikata. Data di analisa dengan SPSS, sensitifitas dan spesifitas di hitung dengan analisa ROC.

**Hasil :** Sebagian besar pasien apendisitis anak di RSUP Dr Sardjito berusia 5-10 tahun (50%), rata-rata laki-laki (56%). Rerata angka leukosit meningkat  $14,33 \pm 6,56 \times 10^3/\mu\text{l}$  dan kadar neutrofil  $76,16 \pm 14,41 \%$  (27-93,2 %). N/L pada pasien apendisitis anak dibandingkan dengan non apendisitis mempunyai nilai sensitifitas 83,5% , spesifitas 57,7%, NPP 81,4%, NPN 61,2%, OR 6,89 dengan *cut off point* 2,87. N/L pada pasien apendisitis anak yang simpel dan komplikata mempunyai nilai sensitifitas 84,6% , spesifitas 56,2%, NPP 35,5%, NPN 92,9%, OR 7,15 dengan *cut off point* 6,59.

**Simpulan :** N/L pasien apendisitis anak dibandingkan dengan non apendisitis mempunyai *cut off point* 2,87. N/L pasien apendisitis anak simpel dan komplikata mempunyai *cut off point* 6,59.

**Kata kunci :** Apendisitis anak,; simple; komplikata; rasio neutrophil limfosit; perasat diagnostik