ABSTRAK

PERUBAHAN KOMPOSISI TUBUH, *PHASE ANGLE*, DAN KEKUATAN OTOT PADA PASIEN KANKER PAYUDARA YANG MENJALANI RADIOTERAPI DI RSUP DR. KARIADI

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Latar belakang: Radioterapi merupakan salah satu modalitas utama dalam tata laksana kanker payudara. Respons inflamasi dan metabolik yang terjadi selama radioterapi berpotensi memengaruhi komposisi tubuh, *phase angle* (PhA), dan kekuatan otot yang berperan terhadap status gizi dan luaran klinis pasien.

Tujuan: Menganalisis perubahan komposisi tubuh, *phase angle*, dan kekuatan otot pada pasien kanker payudara yang menjalani radioterapi.

Metode penelitian: Penelitian cohort prospektif dilakukan pada 27 pasien kanker payudara yang menjalani radioterapi di RSUP Dr. Kariadi Semarang periode Juli 2024–Januari 2025. Pengukuran komposisi tubuh dan PhA dilakukan menggunakan *Bioelectrical Impedance Analysis* (BIA), sedangkan kekuatan otot dinilai menggunakan *handgrip dynamometer*. Pemeriksaan dilakukan sebelum radioterapi, pada dosis 30 Gy, dan setelah radioterapi dosis 60 Gy. Analisis menggunakan Repeated Measures ANOVA, uji Friedman, korelasi Pearson atau Spearman, dan *Generalized Linear Model.*

Hasil: *Visceral adipose tissue* (VAT) mengalami penurunan bermakna selama radioterapi (p=0,047), dengan perbedaan signifikan antara dosis awal dan dosis 60 Gy (p=0,025). *Phase angle* mengalami perubahan bermakna (p=0,019), ditandai peningkatan dari dosis awal hingga 30 Gy (p=0,010) dan penurunan dari 30 Gy hingga 60 Gy (p=0,035). *Fat mass, fat free mass, skeletal muscle mass*, dan kekuatan otot tidak mengalami perubahan bermakna (p>0,05). Jumlah siklus kemoterapi berhubungan dengan perubahan kekuatan otot tangan kanan (p=0,025), sedangkan usia berhubungan dengan perubahan VAT (p=0,019).

Simpulan: Radioterapi pada pasien kanker payudara berhubungan dengan penurunan VAT dan perubahan PhA selama terapi. Usia berhubungan dengan perubahan VAT, sedangkan jumlah siklus kemoterapi berhubungan dengan perubahan kekuatan otot.

Kata Kunci : kanker payudara, radioterapi, komposisi tubuh, *phase angle,* kekuatan otot

ABSTRACT

CHANGES IN BODY COMPOSITION, PHASE ANGLE, AND MUSCLE STRENGTH IN BREAST CANCER PATIENTS UNDERGOING RADIOTHERAPY AT RSUP DR. KARIADI

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Background: *Radiotherapy was one of the main treatment modalities for breast cancer. The inflammatory and metabolic responses occurring during radiotherapy were thought to affect body composition, phase angle (PhA), and muscle strength..*

Objective: *This study aimed to analyze changes in body composition, phase angle, and muscle strength in breast cancer patients undergoing radiotherapy.*

Methods: *A prospective cohort study was conducted in 27 breast cancer patients undergoing radiotherapy at Dr. Kariadi General Hospital, Semarang, from July 2024 to January 2025. Body composition and PhA were assessed using Bioelectrical Impedance Analysis, while muscle strength was measured using a handgrip dynamometer. Assessments were performed before radiotherapy, at 30 Gy, and after completion of radiotherapy at 60 Gy. Data were analyzed using Repeated Measures ANOVA, Friedman test, correlation tests, and Generalized Linear Model.*

Results: *Visceral adipose tissue (VAT) shows a significant decrease during radiotherapy ($p=0.047$), with a significant difference between baseline and 60 Gy ($p=0.025$). Phase angle shows significant changes ($p=0.019$), increasing from baseline to 30 Gy ($p=0.010$) and decreasing from 30 Gy to 60 Gy ($p=0.035$). Fat mass, fat-free mass, skeletal muscle mass, and muscle strength do not show significant changes ($p>0.05$). The number of chemotherapy cycles is associated with changes in right-hand grip strength ($p=0.025$), whereas age is associated with changes in VAT ($p=0.019$).*

Conclusion: *Radiotherapy in breast cancer patients is associated with a reduction in VAT and changes in PhA during treatment. Age is associated with VAT changes, whereas the number of chemotherapy cycles is associated with changes in muscle strength.*

Keywords: *breast cancer, radiotherapy, body composition, phase angle, muscle strength*