Korelasi kadar osteopontin terhadap pengecilan tumor pada kemoradiasi neoajuvan kanker rektum stadium lanjut lokal dievaluasi dengan pemeriksaan radiologi dan enzyme-linked immunosorbent assay = Osteopontin level correlation with tumor shrinkage in neoadjuvant chemoradiation of locally advanced rectal cancer using radiology evaluation and enzyme-linked immunosorbent assay

Mirna Primasari, author

Abstrak

[ABSTRAK
Pendahuluan : Kanker kolorektal termasuk salah satu morbiditas terbanyak di Indonesia dengan hasil terapi yang cenderung memprihatinkan untuk stadium lanjut lokal. Oleh karena itu diperlukan kemoradiasi neoajuvan yang merupakan terapi standar sesuai guideline untuk kanker rektum stadium lanjut lokal, meskipun demikian espons yang dihasilkan sangat bervariasi dan dipengaruhi oleh berbagai faktor, termasuk hipoksia jaringan. Osteopontin adalah penanda hipoksia endogen yang berkorelasi signifikan dengan tekanan oksigen tumor. Osteopontin juga merupakan penanda hipoksia kronis yang lebih akurat dibandingkan Carbonic Anhydrase IX (CAIX), Glucose Transporter 1 (GLUT1), dan Lactate Dehydrogenase A (LDH A) tetapi belum pernah dilakukan penelitian yang mengukur kadar OPN secara kuantitatif pada jaringan kanker rektum serta mengkorelasikannya dengan respons pengecilan tumor pada kemoradiasi neoajuvan.
Metode dan Materi: Dilakukan skrining data pasien dari Rekam Medis Departemen Radioterapi. Empat belas pasien yang memenuhi kriteria inklusi dan eksklusi dianalisis retrospektif dari bulan Februari sampai dengan bulan Mei 2015. Pencitraan radiologi pasca kemoradiasi dibandingkan dengan sebelum kemoradiasi, sementara jaringan rectum didapatkan dari blok parafin yang didapatkan dari biopsi sebelum kemoradiasi. Evaluasi radiologi diukur menggunakan kriteria RECIST 1.1. Kadar OPN diperiksa menggunakan metode ELISA dan diukur menggunakan spektrofometer.
Hasil : Rerata kadar OPN adalah 0.5678 ± 0.26 ng/mL. Terdapat korelasi berbanding terbalik yang kuat (r= -0.630, p= 0.016) antara kadar OPN dan pengecilan tumor. Nilai ambang batas OPN ≥0.538 ng/mL memprediksikan ketidakresponsifan terhadap kemoradiasi neoajuvan dengan tingkat sensitivitas 100% dan spesifisitas 81,8%. Meskipun demikian, tidak terdapat korelasi antara kadar OPN dengan Hemoglobin.
Kesimpulan : Penelitian ini menunjukkan bahwa hipoksia terdapat pada pasien dengan kanker rektum stadium lanjut lokal dan merupakan karakter yang menandai turunnya respons pengecilan tumor terhadap kemoradiasi neoajuvan. Kadar OPN yang makin tinggi menunjukkan kondisi hipoksia yang lebih buruk dan respons yang lebih buruk untuk pengecilan tumor.
<hr>
ABSTRACT
Introduction: Colorectal carcinoma is one of the common cancer in Indonesia with concerned clinical outcome for locally advanced stage, therefore neoadjuvant chemoradiation (CRT) is needed. Neoadjuvant CRT is the mainstay treatment for locally advanced rectal carcinoma, however the response is varied due to many factors, including tissue hypoxia. Osteopontin (OPN) is an emerging endogen hypoxic marker with

significant correlation with tumor pO2, also more accurate chronic hypoxic marker compared to Carbonic Anhydrase IX (CAIX), Glucose Transporter 1 (GLUT1), and Lactate Dehydrogenase A (LDH A) but there's no research that measured OPN quantity in rectal cancer tissue and correlate it with tumor shrinkage response in neoadjuvant CRT.
Methods and Materials: Patients? data was screened from Radiotherapy Department Medical Record Archieves. Fourteen patients that meet the inclusion and exclusion criteria were analyzed retrospectively from February to May 2015. Radiology imaging post CRT compared to the imaging pre CRT, while the rectum tissue obtained from Formalin-Fixed Paraffin Embedded (FFPE) tissue from biopsy sampling before CRT. Radiology evaluation was measured using RECIST 1.1. OPN level was conducted using ELISA method and measured with spectrophotometry.
Results: The mean OPN concentration is 0.5678 ± 0.26 ng/mL. There was a significant strong negative correlation (r = -0.630, p= 0.016) between the OPN level and tumor shrinkage. OPN cut off value ≥0.538 ng/ml predicts non-responsiveness of neoadjuvant CRT with 100% sensitivity and 81.8% specificity. However, there is no correlation between OPN concentration and Hemoglobin concentration.
Conclusion: This study showed that hypoxia occurs in patients with locally advanced rectal carcinoma, and characterizes decreasing tumor shrinkage response in neoadjuvant CRT. Higher level of OPN suggests worse level of hypoxic condition and worse response of tumor shrinkage., Introduction: Colorectal carcinoma is one of the common cancer in Indonesia with concerned clinical outcome for locally advanced stage, therefore neoadjuvant chemoradiation (CRT) is needed. Neoadjuvant CRT is the mainstay treatment for locally advanced rectal carcinoma, however the response is varied due to many factors, including tissue hypoxia. Osteopontin (OPN) is an emerging endogen hypoxic marker with significant correlation with tumor pO2, also more accurate chronic hypoxic marker compared to Carbonic Anhydrase IX (CAIX), Glucose Transporter 1 (GLUT1), and Lactate Dehydrogenase A (LDH A) but there’s no research that measured OPN quantity in rectal cancer tissue and correlate it with tumor shrinkage response in neoadjuvant CRT.

Methods and Materials: Patients’ data was screened from Radiotherapy Department Medical Record Archieves. Fourteen patients that meet the inclusion and exclusion criteria were analyzed retrospectively from February to May 2015. Radiology imaging post CRT compared to the imaging pre CRT, while the rectum tissue obtained from Formalin-Fixed Paraffin Embedded (FFPE) tissue from biopsy sampling before CRT. Radiology evaluation was measured using RECIST 1.1. OPN level was conducted using ELISA method and measured with spectrophotometry.

Results: The mean OPN concentration is 0.5678 ± 0.26 ng/mL. There was a significant strong negative correlation (r = -0.630, p= 0.016) between the OPN level and tumor shrinkage. OPN cut off value ≥0.538 ng/ml predicts non-responsiveness of neoadjuvant CRT with 100% sensitivity and 81.8% specificity. However, there is no correlation between OPN concentration and Hemoglobin concentration.

Conclusion: This study showed that hypoxia occurs in patients with locally advanced rectal carcinoma, and characterizes decreasing tumor shrinkage response in neoadjuvant CRT. Higher level of OPN suggests worse level of hypoxic condition and worse response of tumor shrinkage.]