

RESEARCH ARTICLE

Correlation between EGFR Expression and Radiosensitivity in Cervical Adenocarcinoma Cases

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Abstract

Background: Most of the cervical cancer patients, including those with cervical adenocarcinomas, come at advanced stage in the developing world so its mortality is high. Radiotherapy is one of the treatment modality for advanced stage cervical adenocarcinomas, but its efficacy depends on several prognostic factors such as the stage, histopathology, presence of organ dysfunction and expression of cellular biology markers mainly involve in cell proliferation such as the epidermal growth factor receptor (EGFR). Some research indicates that activation of EGFR in malignancy (including cervical cancer) correlates with aggressive behavior, a poor prognosis and decreasing sensitivity of radiotherapy. However, the combination between targeted therapies and radiotherapy are innovative approaches which may provide a good result. This study aimed to assess any correlation between expression of EGFR and response to radiotherapy in cervical adenocarcinoma cases. **Materials and Methods:** A total of 32 women were registered in a retrospective study period January 2007 and May 2014. Paraffin blocks from these patients were processed by classical histological techniques and for immunohistochemical staining of EGFR, scoring being accomplished according to the immunoreactive scoring (IRS) of Remmele and Stegner. **Results:** Among the studied molecular factors, there was significant correlation expression of EGFR with poor response to radiotherapy ($p=0.0001$). **Conclusions:** The result of this study showed a significant correlation between expression of EGFR and sensitivity of radiation in cervical adenocarcinoma cases. Further research is necessary to obtain information about new therapeutic management.

Keywords: Biological markers - cervical adenocarcinoma - radiotherapy - radiosensitivity

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Introduction

Adenocarcinoma cervix is the second most common type of histopathology in cervical carcinoma cases (Wells et al., 2014). Cervical cancer (including cervical adenocarcinoma) has been the major health problems among Indonesian women because of its high incidence and mortality. Mostly of the diagnosed cases in Indonesia have been stated in advanced stages (IIB-IVB) (Imam, 2009) Radiotherapy is one of the modality treatment for advanced stage in cervical adenocarcinoma (Noordhuis et al., 2011; Wells et al., 2014). The effectivity of radiotherapy depends on several prognostic factors such as the staging, histopathology of tumor, presence of organ dysfunction and cellular biology marker especially markers involved in cell proliferation such as epidermal growth factor receptor (EGFR) (Noordhuis et al., 2011, Gadducci et al., 2013).

In certain studies, the expression of the receptor for epidermal growth factor evident to be an independent predictor of worse prognosis for the cervical cancer, including cervical adenocarcinoma (Noordhuis et al., 2011, Barbu et al., 2013). Prohibiting EGFR through radiotherapy shall be a pledging therapeutic strategy in

cervical cancer (Barbu et al., 2013).

The objective of this study was to search the coherency EGFR biomarkers in patients with advanced cervical adenocarcinoma and its response to radiotherapy. In addition, this study aims to quarry a notioning of the molecular mechanisms and to validate predictors in cervical adenocarcinoma treated with radiotherapy.

Materials and Methods

This research has ethical clearance from Health Research Ethics Committee with number 256/UN6. C2.1.2/KEPK/PN/2014 on June 26th, 2014. This study use analytical observational technique and correlational study with retrospective cross-sectional design.

During January 2007 - May 2014, 32 women from admission were included in this study. Cervical tumor biopsies were taken before radiotherapy and diagnosed as cervical adenocarcinoma. Most of the patients with an age range of 41-59 years old. All of the patients have been received radical radiotherapy which were given based on the standard techniques and dosage in Oncology Radiation Department. Response of radiation for patients with radiotherapy was assessing later after finished

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