

Plasma alpha-1-acid glycoprotein as a potential predictive biomarker for non-haematological adverse events of docetaxel in breast cancer patients

ABSTRACT

Context: Rash and oral mucositis are major non-haematological adverse events (AEs) of docetaxel, in addition to fatigue, nausea, vomiting and diarrhoea, which restrict the use of the drug in cancer therapy. Alpha-1-acid glycoprotein (AAG) is an acute phase reactant glycoprotein and is a primary carrier of docetaxel in the blood. Docetaxel has extensive binding (>98%) to plasma proteins such as AAG, lipoproteins and albumin. **Objective:** To study the association between plasma AAG level and non-haematological AEs of docetaxel in Malaysian breast cancer patients of three major ethnic groups (Malays, Chinese and Indians). **Materials and methods:** One hundred and twenty Malaysian breast cancer patients receiving docetaxel as single agent chemotherapy were investigated for AAG plasma level using enzyme-linked immunosorbent assay technique. Toxicity assessment was determined using Common Terminology Criteria of Adverse Events v4.0. The association between AAG and toxicity were then established. **Results:** There was interethnic variation of plasma AAG level; it was 182 ± 85 mg/dl in Chinese, 237 ± 94 mg/dl in Malays and 240 ± 83 mg/dl in Indians. It was found that low plasma levels of AAG were significantly associated with oral mucositis and rash. **Conclusions:** This study proposes plasma AAG as a potential predictive biomarker of docetaxel non-haematological AEs namely oral mucositis and rash.

Keyword: AAG; Adverse events; Docetaxel; Oral mucositis; Rash