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A review on esophageal cancer and monitoring the adverse drug reaction of chemotherapeutic agents prescribed for treating esophageal cancer.

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ABSTRACT

Esophageal cancer (EsC) is one of the least studied and deadliest cancers worldwide because of its extremely aggressive nature and poor survival rate. It ranks sixth among all cancers in mortality [(1)].The review on esophageal cancer is aimed to determine the prevalence of adverse events associated with the chemotherapeutic agents. Systematic search of Medline database using PubMed for articles of esophageal cancer and chemotherapy up to the recent studies. The result of the study indicate the therapy contain adverse reaction related to chemotherapeutic agents were mild to moderate and are irreversible. Esophageal cancer has often poor survival when it is diagnosed at the time of clinical symptoms. An effective outcome on esophageal cancer by the use of chemotherapeutic agents cannot be achieved completely and adverse reaction of chemotherapeutic agents also harms the patient [(8)]. The effective counter measures and a low incidence of mild ADR leads to a better compliance and an enhanced survival rate in esophageal cancer patient.

Keywords: ADRs, Cancer, Chemotherapy.

INTRODUCTION

Esophageal cancer is a disease in epidemiologic transition. [(2)]Oesophageal cancer (or oesophageal cancer) is malignancy of the oesophagus [(2)]. There are various subtypes, primarily squamous cell cancer (approx. 90–95% of all oesophageal cancer worldwide) and adenocarcinoma. Squamous cell cancer arises from the cells that line the upper part of the oesophagus [(2)].Adenocarcinoma arises from glandular cells that are present at the junction of the oesophagus and stomach. With the dramatic advances in the medical science, treatment of many cancers is not palliative, but rather curative in today's world.

Esophageal cancer (EsC) is one of the least studied and deadliest cancers worldwide because of its extremely aggressive nature and poor survival rate. It ranks sixth among all cancers in mortality [(1)]. In retrospective studies of EsC, smoking, hot tea drinking, red meat consumption, poor oral health, low intake of fresh fruit and vegetables, and low socioeconomic status have been associated with a higher risk of esophageal squamous cell carcinoma[(3)]. It has been seen that healthcare cost increases to a great extent due to Adverse Drug Reactions (ADRs). Sometimes the ADRs are so serious and severe that, cost needed to treat morbidity and mortality due to it, is more than the cost needed to treat the actual

condition of interest. The commonly used chemotherapeutic agents were cisplatin, cyclophophamide, 5-fluorouracil, paclitaxel, Adriamycin, gefitinib, irinotican, procarbazine, docetaxel, dacarbazine, ifsotamide, thiotepa, busulfan, capacitabin [4].

Chemotherapy is employed as part of a multimodal approach to the treatment of many tumours [5]. The acute effects of frequent administration of anti-neoplastic drugs includes nausea-vomiting, via a central mechanism and sometimes extremely severe [6]. Many of the adverse effects of anti-neoplastic are an extension of their therapeutic action, which is not selective for malignant cells but affects all rapidly dividing cells; anti-neoplastic therapy is made possible only by increased sensitivity or less effective recovery of malignant cells compared with normal cells [6].Compromising dose intensity of cancer drug therapy by delaying or reducing doses can compromise outcomes of therapy. The dosage regimen and the method of administration can greatly affect their efficacy and toxicity [7].Adverse drug reactions (ADRs) are a global problem adding to the economic burden of the society.

METHODOLOGY

Study design

We performed systematic search of Medline database using PubMed for articles of esophageal cancer and chemotherapy up to the recent studies .Systematic search was performed using keyword Chemotherapy and esophagealcancer. All the researches were limited to human studies and English language.

Inclusion and exclusion criteria

Among the patients receiving chemotherapy, those who developed at least one ADR, were included in the study. The patients who did not show any ADR except alopecia were excluded from the study.

Study tools

Adverse drug reaction reported by using from various journals to collect the ADRs data.

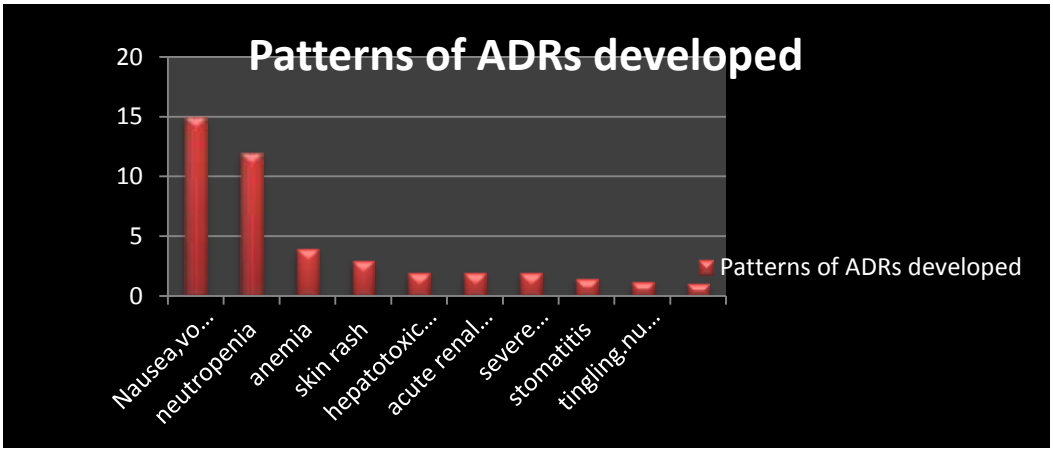
Statistical analysis

After collection of data, it was double entered in Microsoft Excel sheet and validated.

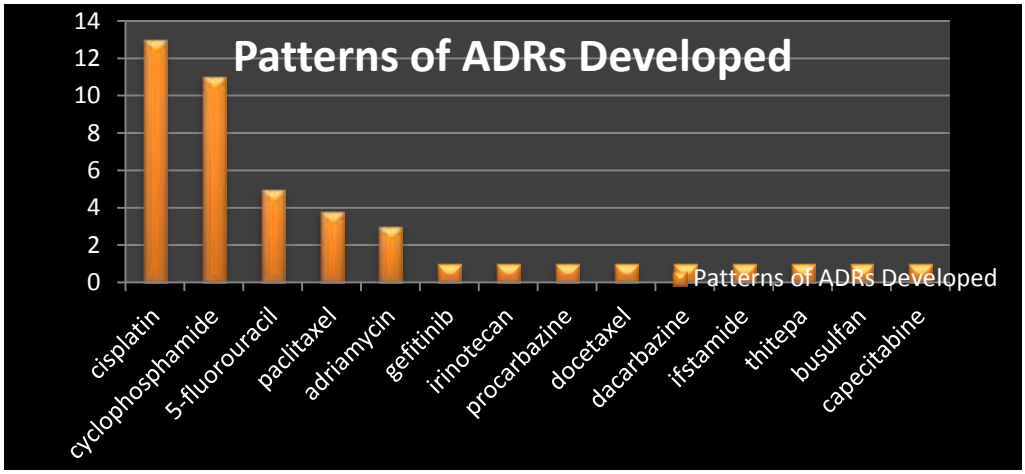
RESULT

In this study, 52 patients received chemotherapeutic agents for the treatment of their malignant conditions. Among these 52 patients, 45 (86.53%) developed serious adverse drug reaction due to any chemotherapeutic agent.

The pattern of adverse drug reactions developed among the patients. Most common adverse drug reaction experienced was nausea and vomiting (developed among 15 patients). Neutropenia was found to be second most common adverse drug reaction experienced by 12 persons. Other adverse drug reactions were less common. Anaemia was developed among 4 patients; 3 patients experienced skin rash; 3 patients experienced hepatotoxicity; 2 patients had acute renal failure; another 2 patients suffered from severe diarrhoea. Only 1 patient has acute stomatitis. Tingling and numbness was seen in 1 patient. Rare finding like cerebellar ataxia was experienced by one patient.



Most of the patient receiving esophageal cancer chemotherapy developed ADRs. Most common ADRs found were nausea and vomiting followed by neutropenia. Cisplatin, Cyclophosphamide, 5-Fluoro uracil, Paclitaxel and Adriamycin were common drugs causing ADRs. Cisplatin was most common drug which caused adverse drug reactions in 13 patients. Cyclophosphamide was second most common drug. It caused adverse drug reactions in 11patients. After receiving 5-fluoro uracil (5-FU) five patients had adverse drug reactions. Four adverse drug reactions after taking Paclitaxel and three adverse drug reactions were seen after receiving Adriamycin. Gefitinib, Irinotecan, Procarbazine, Docetaxel, Dacarbazine, Ifostamide, Thiotepa, Busulfan and Capacitabine-these were responsible for development of adverse drug reaction in one patient each.



DISCUSSION

Our study identified pattern of ADRs caused by chemotherapeutic agents used for esophagealcancer. In our study 86.53% of the patients receiving anti-neoplastic drugs developed ADRs.Nausea and vomiting were found to be commonest ADRs in patients. In other studies also these were found to be the commonest ADRs. The most common mechanism of chemotherapy induced nausea and vomiting is through activation of Chemoreceptor Trigger Zone (CTZ) [9]. Since vomiting is a common problem associated with cancer chemotherapy, strategies should be made to prevent and manage the vomiting in patients undergoing cancer chemotherapy. Cisplatin was responsible for 29% of the total ADRs followed by cyclophosphamide. ADRs associated with the use of Cisplatin are nausea, vomiting, myelosuppression, peripheral neuropathy, ototoxicity and nephrotoxicity.

CONCLUSION

Esophageal cancer has often poor survival when it is diagnosed at the time of clinical symptoms. Cisplatin-based chemotherapy has a high potential to cause adverse effects. Most of the reactions were of milder nature but not preventable. The common adverse effects such as nausea and vomiting were preventable. Anti-cancer drugs are prone to cause ADRs and there is lack of pharmacovigilance data on such drugs.

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