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Case Report

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A CASE REPORT ON CHEMOTHERAPY INDUCED ALOPECIA AND ANEMIA

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ABSTRACT

Ovarian cancer is a gynaecological cancer that usually arises from disruption or mutations in epithelium of the ovary. It is associated with highest mortality among the gynaecological cancer. It is denoted as the "silent killer" because of nonspecific signs and symptoms that often lead to a delay in diagnosis. With more than 23000 new cases diagnosed annually ovarian cancer is the fifth most common cancer in Indian womens.It is also fifth leading cause of cancer death in women with 13900 deaths estimated in 2010. A 57 years female patient was admitted in General Medicine with the chief complaints of breathlessness which is aggravated on walking and relieve upon taking rest, generalised weakness, evening time chills since 7 days, hair loss which is progressively increasing day to day since 1 month. Patient past medical and medication history includes she is known ovarian cancer under treatment with carboplatin-360mg/$m^{2,}$ pacitaxel- 175mg/m^2since 3 months. In our case, patient had a history of usage of chemotherapy and had developed anemia and alopecia; this is the reason for hospital admission. Better vigilance is necessary for implementation of safe and effective treatment for each individual patient. In-order to prevent serious adverse drug reactions of chemotherapy, close monitoring during treatment course.

KEYWORDS: Chemotherapy, ovarian cancer, bone marrow suppression, Causality assessment**,** Vigilance.

INTRODUCTION

Cancer is a mass of tissue formed as a result of abnormal, excessive, uncoordinated, autonomous and purposeless proliferation of cells even after cessation of stimulus for growth which caused it. Various types of cancers like prostate cancer, lung cancer, ovarian cancer, lymphoma, leukaemia, Melanoma, Basal cell cancer, breast cancer etc.[1] The ovaries are usually twice normal in size, are gray white with a smooth outrer cortex and are studded with sub cortical cysts 0.5 – 1.5 cm in diameter. Ovarian cancer is a gynaecological cancer that usually arises from disruption or mutations in epithelium of the ovary. It is associated with highest mortality among the gynaecological cancer. It is denoted as the "silent killer" because of nonspecific signs and symptoms that often lead to a delay in diagnosis. With more than 23000 new cases diagnosed annually ovarian cancer is the fifth most common cancer in Indian womens. It is also fifth leading cause of cancer death in women with 13900 deaths estimated in 2010.[2] Tumours of the ovary are amazingly diversed pathologic entities. This diversity is attributable to the three cell types that make up the normal ovary. The multi potential surface covering epithelium, the totipotential gem cells and the multi potential sex core or Stromal cells each of these cell types gives raised to a variety of tumours. It is evident that neoplasm of surface epithelial origin account for the great majority of all primary ovarian tumours, and in their malignant forms account for almost 90% of all ovarian cancers. These epithelial tumours are then the bananas that require most medical attention.[3] Germ cells and sex or Stromal cell tumours are much less frequent and although they constitute 20-30% of all ovarian tumours are collectively responsible for less than 10% cancer of the ovarian. Several risk factors for ovarian cancers have been recognised. Two of the most important ones are null parity and family history. There is a high incidence of carcinoma in unmarried and married women with low parity. Interestingly, prolonged use of oral contraceptives reduces the risk. Although only 5-10% of ovarian cancers are familial much is being learned about the molecular pathogenesis of these cancers by identifying the culprit genes in these cases. A majority of hereditary ovarian cancers appeared to be caused by mutations in the BRCA genes, BRCA1 & BRCA2. These are associated with hereditary breast cancer. Indeed, with mutations in these genes there is increase risk of ovarian and breast cancer. The average lifetime risk for both ovarian cancers approximately 30% in BRCA1 carriers, varying from 16-44% in different studies.[4] The risk of BRCA2 carriers is somewhat lower than when compared to BRCA1 carriers. Although mutations in BRCA genes are present in the majority of familial cases of ovarian cancer, such mutations are seen in only 8-10% sporadic ovarian cancer. Thus there must be other molecular pathways to ovarian neoplasm. For

example ERBB2 is over expressed in 35% of ovarian cancer and this is associated with poor prognosis. K-RAS is over expressed in upto 30% of tumours mostly mucimous cystadenocarcinomas. As with other cancers, TP53 is mutated in about 50% of all ovarian cancers. Risk factors of ovarian cancer are increasing age, hormone replacement therapy, family history genes, endometriosis, smoking, being overweight, obese. Epithelial tumours, Germ cell carcinoma tumours, Stromal carcinoma tumours, Small cell carcinoma of the ovary are the various types of cancer.[5] Common gene mutations in ovarian cancer occur in NF1, BRCA1, BRCA2 and CDK12. There are four stages of cancer stage I- Tumour is only in ovaries not spread to other organ tissues. Stage II- cancer in one or both ovaries and spreads to other organs or tissues within the pelvis. Stage III- Cancer is in ovaries and spread outside the pelvis to tissues in the abdomen. Stage IV- cancer has spread to distant sites in the body beyond the pelvis and abdomen. The treatment includes Surgery, Chemotherapy, Hormone therapy, Targeted therapy, Radiation therapy.[6] Chemotherapy includes pacitaxel and carboplatin -21 days, Pacitaxel and carboplatin -7 days. Doceltaxel and carboplatin- 21 days for stage 1. Pacitaxel and cisplatin (IV) – 21 days. Pacitaxel and carboplatin – 7, 21 days. Doceltaxel and carboplatin- 21 days. Carboplatin and liposomal doxorubicin- 28 days. Bevacizumab with pacitaxel and carboplatin- 21 days for stage II, III, IV.[7]

CASE

A 57 years female patient was admitted in General Medicine with the chief complaints of breathlessness which is aggravated on walking and relieve upon taking rest, generalised weakness, evening time chills since 7 days, hair loss which is progressively increasing day to day since 1 month. Patient past medical and medication history includes she is known ovarian cancer under treatment with carboplatin-360mg/$m^{2,}$ pacitaxel-175mg/m^2 since 3 months. Personal history includes patient had a history of taking mixed diet, sleep decreased, appetite was decreased and once had a habit of betel leaves chewing. On general examination patient is conscious and cooperative, Pallor positive. On local examination of scalp shows hair loss. On physical examination PR-72bpm, BP-120/80mmHg RR-22c/m was normal. On system examination shows CVS-S1S2 +ve, RS- clear, CNS- NAD. On lab investigations complete blood picture shows Hb levels were decreased i.e. 8.0 gm/dl (12-15g/dl). The treatment was given as follows T. IFA 333.5mg once in a day, T.B-Complex 67mg once in a day; T.Pantoprazole 40 mg once in a day and 1 pint (350 m.l) of packed cell transfusion was given. Based on the above information here we suspected that this is an ADR developed due to chemotherapy and it is the reason for hospital admission. Patient alopecia condition was showed in following figure (1).

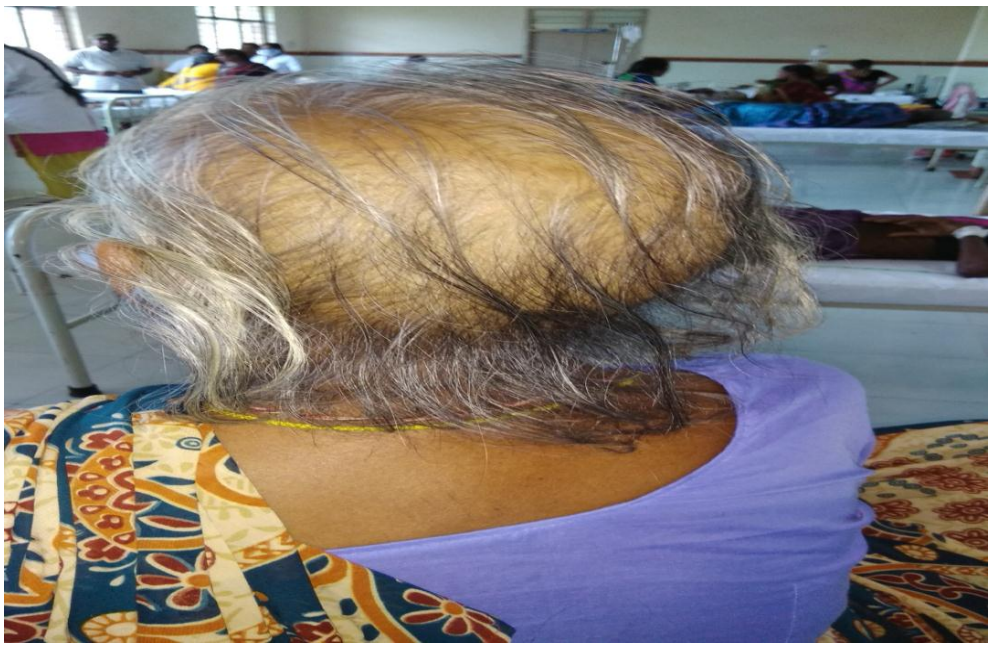

Figure1: showing patient scalp region with alopecia.

Causality assessment

To evaluate the relationship between the drug and reaction, we have performed causality assessment by using scales like WHO causality assessment scale, Naranjo's scale and Karsch Lasanga scale and analysis of observed ADR.

Table 1: Causality assessment of suspected ADR.

ADR SCALE	WHO-UMC	NARANJO'S	KARSCH&LASAGNA
ASSESSMENT	PROBABLE	PROBABLE	PROBABLE

Table 2: Analysis of observed ADR.

SEVERITY ASSESSMENT	Moderate Level-4
PREVENTABILITY	Not Preventable
PREDICTABILITY	Predictable

DISCUSSION

Chemotherapy is the treatment of malignancy with drugs which destroys cancer cells preferentially with minimal damage to post tissues. While destroying cancer cells, anticancer drugs also effects rapidly proliferating normal cells like Bone marrow, skin, hair, gastrointestinal mucosa renal system, gonads, foetus, etc. are more severely affected. Bone marrow suppression manifests as leucopoenia, agranulocytosis thrombocytopenia and anemia which can be managed by using platelet transfusion, granulocyte, colony stimulating factor, erythropoietin, bone marrow transplantation, using bone marrow sparing drugs if possible. Alopecia is due to the damage to hair follicles .Alopecia is usually reversible on stoppage of therapy but there is no need of any other drug therapy like minoxidil gel, vitamins and mineral supplements. In our case chemotherapy was given in ovarian cancer for reducing abnormal growth of cells. Generally it will cause common adverse drug reactions like skin rashes, alopecia, anemia, agranulocytosis, thrombocytopenia, nausea, vomiting, oligo zoospermia, gout, uratestones, haemorrhagic cystitis, nephrotoxicity, neuropathy, pulmnory fibrosis and cardio toxicity.[8,9] In our case, patient had a history of usage of chemotherapy and had developed anemia and alopecia; this is the reason for hospital admission. After hospital admission as a clinical pharmacist we have identified adverse drug reactions as follows, the patient was under the medication with carboplatin and paciltaxel, based upon the literature reviews and based on laboratory investigations and based on local examination we have concluded that this condition is due to the drugs carboplatin and paciltaxel and performed causality assessment, severity, preventability, predictability. Usually ADR management includes suspected drug with drawl, either symptomatic or specific therapy is applicable but in our case there no chance for removing the suspected drug so that we have given symptomatic treatment like blood transfusion and also oral iron and vitamin supplements, but for alopecia we have not given any therapy because it is reversible on stoppage of therapy.

CONCLUSION

Better vigilance is necessary for implementation of safe and effective treatment for each individual patient. In-order to prevent serious adverse drug reactions of chemotherapy, close monitoring during treatment course, creating awareness, recognition of the problem and careful management of all patients who receive this chemotherapy are essential, because chemotherapy commonly causes various general toxic effects including anaemia and alopecia, if not providing close monitoring during treatment course, which causes permanent disability, morbidity, mortality.

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