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Investigating the Prevalence of Anemia and its Relation with Disease Stage and Patients' Age with Cervical Cancer Referred to Department of Radiotherapy and Oncology of Ahvaz Golestan Hospital during 2004-2008

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ABSTRACT

Generally, blood transfusion is involved in helpful anemia in the cancer patients, but this action should be occurred as soon as possible prior to the first dose of radiotherapy to create the greatest impact. The aim of doing this study was to investigate the prevalence of anemia and its relation with age and disease stage in patients with cervical cancer referred to department of radiotherapy and oncology of Golestan Hospital as cancer center of South West of country. There are studied and investigated 166 patients with cervical cancer referred to department of radiotherapy and oncology of Golestan hospital in terms of blood hemoglobin before treatment, age and disease stage. In this study, the hemoglobin level lower than 12gr/dl was considered as anemia. The prevalence of anemia was 59% which is the most common anemia in patients with cervical cancer in the area. With investigation of a significant relation of anemia prevalence with the patients' age and disease stage, it was observed that the patients' age and disease stage had not a significant relation with the prevalence of anemia. Due to the obtained results of significant relation of age and disease stage, it can be concluded that the risk of anemia can be existed in all patients.

Keywords: Cervical cancer, Anemia, Radiotherapy.

INTRODUCTION

Cervical cancer is the most common cancer among the special cancer of women. And it is the third common cancer in women. Around the world half a million women are involved in cervical cancer annual which 233 thousand cases lead to death. In developing countries, cervical cancer is at the top causes of death of cancer(1). Although several non-invasive techniques have been developed for the treatment of various diseases and cancers, surgery is the gold standard option for most of life-threatening diseases.

Human papilloma virus (HPV) has been identified in more than 99% of cervical cancers and today, catching to this infection has been accepted as a cause in the most cervical cancers(2).Social factors related to cervical cancer are in connection with the transmission of human papilloma virus including the first sexual relation at an early age, the availability of multiple sexual partners, male sexual partner with a history of having multiple partners, multiple pregnancy, the history of catching venereal disease, including gonorrhea, chlamydia, herpes and human papilloma virus(1). The highest incidence level of cervical cancer is seen in in population with lower screening rates with high prevalence record of human papilloma virus and relatively free sexual behaviors(2). Pre-invasive lesions of cervical cancer usually are diagnosed during the screening of periodic cytologic. Disease in the early stages of invasion may be without any sign and usually it is recognized during the screening examinations. The first symptoms of cervical cancer usually are irregular vaginal bleeding. Long pre-invasive stage in the cervical cancer and high prevalence of disease in the population who are not under screening and the sensitivity of cytologic screening has made cervical cancer to an ideal target for cancer screening(2). According to the instruction of college of obstetrics gynecology of America published in 2009 screening with pap smear should begin in the 21 years old and continues until 30 years old every two years. In the pathological classification, more than 90% of cervical tumors are squamous cell carcinoma, about 7-10% is adenocarcinoma and 1-2% is clear cell carcinoma, type of mesonephric, neuroendocrine carcinoma, melanoma and sarcoma. The staging system of the International Federation of Obstetrics and Gynecology (FIGO)is divided cervical cancer into 4 main stages as standard system. In I stage which itself is divided into I_{A1}, I_{A2}, I_{B1} and I_{B2}, cancer is limited to cervical. I_A stage of invasive carcinoma which it is recognized only in the microscopic form and the depth of invasion is lower than 5 mm, the maximum horizontal expansion is 7mm. the standard treatment of I_{A1} (depth of invasion lower than 3 mm) is included cervical conization or total hysterectomy (type 1). For the patients who are I_{A2} (tumor invasion between 3-5 mm), the treatment is included modified radical hysterectomy (type 2) in combination with bilateral pelvic lymphadenectomy. The patients with microscopic non-invasive and invasive stage should be excluded from surgery. For these patients radiotherapy is an alternative option. In I_B stage by definition is visible lesion clinically but limited to cervical and depending on size of the lesion is divided into two sub-groups I_{B1} (lesion smaller than 4 cm) and I_{B2} (lesion bigger than 4 cm). II stage is included the tumors which is exceeded from cervix without the involvement of pelvic wall or 1.3 lower vagina. II_A is included tumors which have not parameter conflict and II_B is included tumors with parameter conflict. Treatment in radiotherapy I_B and II_B is as external and internal radiation or radical hysterectomy (type 3) with pelvic lymphadenectomy. In I_{B2} stage (large tumors) also is required radiotherapy or chemotherapy after surgery. III stage of disease is included tumors with the expansion to the pelvic wall or 1.3 involvement of the lower vagina or hydronephrosis or kidney failure. IV tumor stage is exceeded from the true pelvis or there is the involvement of bladder mucosa or rectal (In IV_A adjacent organ involvement and IV_B distant organs). In II_B, III and IV_A stages radiotherapy is initial local treatment which it is better along with simultaneous chemotherapy in most patients(1).
It can be divided the effective factors on the prognosis of the cervical cancer into two categories: 1) factors associated with tumor (including type of human papilloma virus, tumor size, depth of invasion, tumor metastasis to the lymph nodes and pelvic appendices, the tumor margins status after surgery, the course of treatment period), 2) factors associated with patient (including age, high blood pressure, catching to papilloma virus infection and blood hemoglobin level) (1). It has been seen relation in studies between low pressure oxygen within the tumor with increasing of regional and distant metastases and reduce the life time of patients(2). Many radiotherapy and oncology specialists use the transfusion of red blood cells to correct anemia before starting radiotherapy treatment routinely. This action may be has a desirable effective on the increasing of patients' energy level and feel healthy and also tumor sensitivity to radiation. Usually this treatment continues until reaching hemoglobin to 12-12.5. Hypoxic tumors have more possibility for regional and local recurrence compare to tumors which they are oxygenated as well, regardless that the initial local treatment was surgery or radiotherapy. Human combined erythropoietin has not recommended routinely to modify hemoglobin due to the complications of trombocitic and lack of benefit in life expectancy level(1).

There is not statistics of prevalence of anemia in patients with cervical cancer referred to department of radiotherapy and oncology of Ahvaz Golestan Hospital cancer center of south west of country. Therefore, having an accurate statistics of prevalence of anemia in these patients and its removal before starting treatment has a major impact in the disease prognosis. In this study will be examined the prevalence level of anemia and its relation with age and disease stage.

Statistical Procedures
In this study, descriptive epidemiologic, the blood hemoglobin level before treatment, age and disease stage was extracted from patients' records by year in all patients with cervical cancer referred to department of radiotherapy

and oncology of Ahvaz Golestan hospital during the years of 2004-2008 and it was registered in the information table. In this study, the hemoglobin level lower than 12gr/dl has considered as anemia. In this study, all patients are studied and if it is complete none of the patients is not exist from study. Thus, with completion the obtained information, it has been analyzed the prevalence of anemia in above patients as well as the anemia relation with the disease stage and also patients' age with SPSS statistical software.

RESULTS

In this study, the total number of referred patients with diagnosis of cervical cancer (including squamous cell & adenocarcinoma) were 166 during the years of 2004-2008 which from these numbers, 86 patients had full record (including all variables) and the rest were incomplete in some variables (hemoglobin or disease stage) which only it was studied the available variables. The total number of patients referred to department of radiotherapy and oncology during these years was 6167 and due to the number of 166 patients with cervical cancer, these patients were composed 2.7% of total referred patients. The studied patients were in the age gap of 22-83 years old with average age of 17.52 years old. The most disease prevalence was in the ages of 41-50 and 51-60 years old. In this study, 101 patients were investigated in terms of hemoglobin which from these numbers, 59 patients had hemoglobin lower than 12gr/dl, therefore, the anemia prevalence in this study was 59% in total referred patients (Table 1).

Table 1- number and percentage of patients with anemia separated by age

Age category	Number of total patients	Number of anemic patients	Percentage
21-30	2	0	0
31-40	21	10	47
41-50	55	20	36
51-60	53	16	30
61-70	26	11	42
71-80	8	1	12.5
81-90	1	1	100
Total	166	59	

Due to the done analysis, anemia prevalence had not a significant relation with patients' age.

Table 2-The number and percentage of patients with anemia separately in each stage of disease

Stage	Total number of patients	Number of patients with anemia	Percentage
1	18	9	50
2	51	27	53
3	12	11	91.5
4	5	4	80
Total	86	51	

Due to the done analysis, anemia prevalence had not a significant relation with the disease stage.

DISCUSSION

In this study which is the first study in the patients of this region, anemia prevalence is 59% which it represents the high prevalence of anemia in patients with cervical cancer. On the other hand, anemia prevalence had not a significant relation with the studied age category and disease stage and the risk of anemia can be existed in all patients. In published study in January 2014 by Shin and et al, the anemia prevalence before treatment was 12.3% in the cervical cancer patients who were in the initial stages of disease and had been under hysterectomy radical. In this study, there was a relation between low level of hemoglobin before starting treatment and disease-free survival of patients(3).As well as Fuso and et al study which was published in 2005, it was specified hemoglobin level before treatment as the strongest factor related to response to neoadjuvant chemotherapy treatment of patients with advanced cervical cancer. In this study, it was considered 12gr/dl hemoglobin threshold to differentiate appropriate and in appropriate response to treatment(4).Also, the study result which Grigiene and et al were published in December 2007 showed that anemia is predictive of overall survival, disease-free survival and local control in patients with cervical cancer which they had been under radiation significantly and independently(5).As Juergen in 2002 showed the hemoglobin level is the strongest prognostic factor on the local treatment and patients' life span

during the course of radiotherapy (6). Abuzullof study in 2008 showed patients with hemoglobin lower than 12 had lower disease-free survival significantly before starting radiotherapy treatment(7).Therefore, due to the highest prevalence of anemia in the studied cervical cancer patients and the negative effect of anemia on the patients' prognosis, it is considered necessary having specified protocol to detect and treat it before starting and during the treatment. According the results of this study, it is recommended the investigation of hemoglobin level in all referred patients in each age and in each disease stage before starting treatment and also weekly during chemo radiotherapy and doing treatment measures if needed.

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The mean age of patients with high-grade SIL is approximately 30 years, whilst the time interval for the progression to cancer is approximately 10 years. The fact that the precursor stage develops slowly (10 - 20 years) implies that a single smear performed within this period will diagnose the disease should the smearâ€™s sensitivity be adequate.Â The success of the screening programme in reaching its aims is dependent on achieving adequate coverage.Â If the second smear is also inadequate, the patient should immediately be referred to a known competent screening service.Â Based on the above, the Department of Health proposes three (3) smears per lifetime, with a 10-year interval between each smear, commencing at not earlier than age 30 years. 1.3 Referral Criteria. Stage and Patients' Age with Cervical Cancer Referred to Department of. Radiotherapy and Oncology of Ahvaz Golestan Hospital during 2004-2008. By: Shahbazian, H (Shahbazian, Hodjatollah)[1] ; Marrefi, MS (Marrefi, Mahdiyeh Sahimpour)[2] ; Arvandi, S. (Arvandi, Sholeh)[1] ; Shahbazian, N (Shahbazian, Nahid)[3]. View ResearcherID and ORCID.Â this study was to investigate the prevalence of anemia and its relation with age and disease stage in patients with. cervical cancer referred to department of radiotherapy and oncology of Golestan Hospital as cancer center of. South West of country. There are studied and investigated 166 patients with cervical cancer referred to. Conclusion Cervical cancer is preventable yet poverty, poor education, lack of cancer awareness coupled with an absence of regular screening programs, late patient presentation, sub-optimal diagnosis and treatments are major factors contributing to the alarmingly low survival rate of cervical cancer patients in Kenya. It is concluded that simple cost-effective changes in clinical practice could be introduced which would have a marked impact on patient survival in this setting.Â Between 2008 and 2010, 355 patients with histologically confirmed ICC were recruited at the Departments of Gynaecology and Radiotherapy at Kenyatta National Hospital (KNH).