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STUDY TO KNOW PREVALENCE AND HAEMATOLOGICAL PARAMETERS IN COLORECTAL CANCER PATIENTS, HAYATHABAD MEDICAL COMPLEX

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Abstract:

Objective: The objective of this study is to assess the prevalence of colorectal cancer (CRC) and haematological parameters in patients of Hayathabad Medical Complex
Study Design: The study design is observational and analytical.
Place and Duration of Study: This study was conducted at Hayathabad Medical Complex from March 2016 to June 2017.Materials and Methods: Cancer patients were the subjects of this study who visited Hayathabad Medical Complex. A total of 200 patients were included, consisting of 110 males and 90 females aging between 46-80 years. The medical records were retrieved, of the patients suffering from various cancers, i.e. lung, colorectal, blood, breast and thyroid etc. The patients who were diagnosed to have CRC were assessed for the prevalence & the haematological parameters. The data was analysed using SPSS 17.Results: Prevalence of CRC: 200 patients, 49 (24.5%) males of age 46 – 80 (average 63) years, and 13 (6.5%) females aging 48 – 72 (median 60) years were found to have CRC. Haematological parameters of CRC patients: In both genders, majority (~80%) of the patients had Hb level ~10g/dl. The type of anaemia they showed was due to iron deficiency. The ESR was found to be raised (~45mm/hour) in all subjects both male and female. The WBC and platelet count was in normal range.Conclusion: Prevalence found was significant, (31%) of CRC amongst various cancer patients. Hb and ESR, two haematological parameters were significantly disturbed in these CRC patients. The Hb and ESR parameters are very important in CRC disease and its prognosis and they are inexpensive investigations.

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INTRODUCTION:

Colorectal cancer (CRC) is the most common cancer among adult males and the second most common cancer among adult females after breast cancer in Pakistan, and the second among females around the world and the third most common cancer among males [1,2]. The survival after the diagnosis is estimated close to 5 years.

The differences in the prevalence of CRC worldwide are dependent on different dietary and environmental factors [3,4], which are supported by the evidence of the studies of migrants, moving from low risk to high risk areas [5,6]. The increased risk of CRC was reported in the people, who consumed the diet, poor in fibre, such as meat [7] and fat [8]. It has also been shown that obesity and lack of exercise and physical activity are the major risk factors of CRC [9-12]. Other causes of CRC include Crohn's disease and ulcerative colitis [14] as genetic predisposition [13]. In some reports, relevance between anaemia and CRC was shown where the patients presented with anaemic features later diagnosed with CRC [15]. A study shows that microcytic hypochromic (Iron deficiency) anaemia is the main presenting feature of these patients which is another prognostic predictor [16-20]. Several studies have already observed haemoglobin level of CRC patients before the treatment [21]. However scarce data is published relevant to the prevalence of CRC and the changes in haematological parameters, including Hb and ESR levels.

WBC and platelet counts during the time of the diagnosis and before starting the treatment.

MATERIALS AND METHODS:

All 200 patients were included in the study. The range of age is 46 to 80 years. A medical record of the patients was made available for the study. The patients were diagnosed through histopathological reports CRC and their haematological parameters were assessed for changes. The retrospective study was conducted during March 2016 to June 2017 and the data analysed using SPSS 17.

RESULTS:

Prevalence of CRC:

In the total 200 patients, 62 (31%) had CRC, from which 49 (24.5%) were male aged 46 to 80 (median 63) years, and 13 (6.5%) were female 48 to 72 (median age 60).

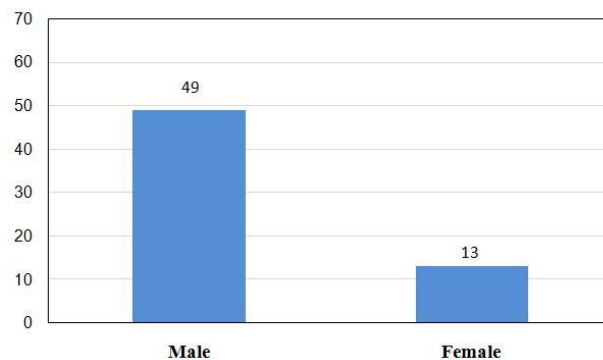Figure 1 and figure 2 describe the prevalence of CRC patients in number and percentage, respectively.

Figure No.1: Prevalence (in number) of CRC patients. Out of total 200 cancer patients, 49 males and 13 females had CRC.

Assessment of haematological parameters in CRC patients:

The parameters before treatment of Hb, ESR, WBC and platelet counts. In male, the Hb level range was between 4 to 13g/dl (normal 13-18g/dl), and in females between 9 to 14g/dl (normal 12-16g/dl). In both genders, majority (80%) of the patients had Hb level ~10g/dl (figure 3). Iron deficiency anaemia were present in the patients. The ESR was ~45mm/hour in both male and female (normal range <20mm/hour) (figure 4).

Total WBC count in both males and females was found to be $3.7 - 11.7 \times 10^3/mm^3$ (normal 4 - 11 $\times 10^3/mm^3$). Platelet count was $120 - 300 \times 10^3/mm^3$ (normal $150 - 450 \times 10^3/mm^3$). The normal range of lab values for these parameters were already been described[22].
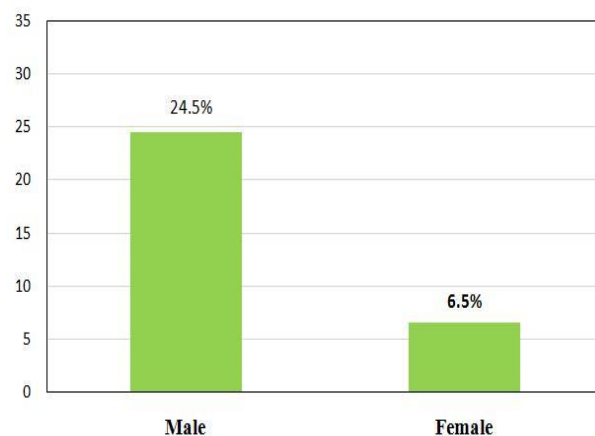

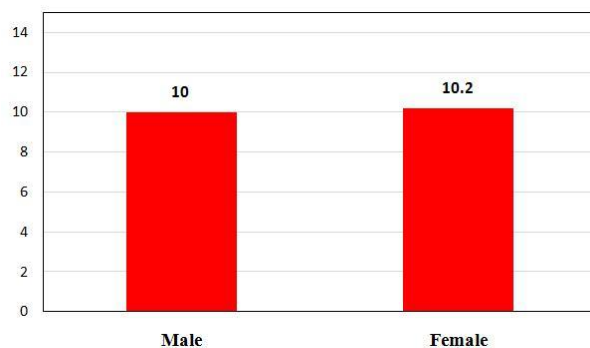**Figure No.2: Prevalence of CRC patients (in percentage).**

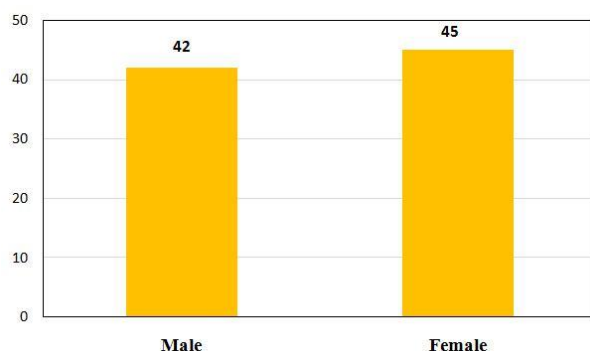**Figure No.3: Haemoglobin 10g/dl in male, 10.2g/dl in female.**

Figure No.4: ESR level of CRC patients. 42mm/hour in one hour in males and 45mm/hour in females.

DISCUSSION:

The current study determines the prevalence of colorectal cancer and assesses haematological parameters among cancer patients. In first part of the discussion, prevalence of CRC is discussed. Significant percentage of CRC (31%) in cancer patients is found. Among all patients, CRC was found to be most common in males and in females second most common after breast cancer, which indicates high prevalence of disease. This study correlates to some extent with another study of Saudi Cancer Registry, in regard to the prevalence of CRC in males found to be most common, but number third among females, where breast cancer comes first and thyroid cancers is the most common after that.

The median age was 60 years in males and 55 years in females[23]. This indicates that CRC is on rise not only in males, but in females as well. On the basis of age, CRC was common at the age of 63 years in males and 60 years in females. In other studies the median age of CRC patients is slightly different, where the age was reported to be 60 years for males

and 55 years in females [23]. Another study showed that the higher incidence of CRC in middle age people, where the median age of male patients reported as 46 for male and 41 years for female [24]. These differences might be due to differences in environmental factors and mainly the dietary habits. The dietary / environmental factors are shown to be as variable factors for the development of CRC [4-6].

In this study, haematological parameters, the Hb and the ESR in majority (~ 80%) of CRC patients, levels of Hb found to be in average of 10g/dl, showed iron deficiency anaemia. A study correlates with the results of the current study, which shows iron deficiency in majority of the CRC patients [25]. A study in China showed that the survival rate of CRC patients who had anaemia was low [26]. It shows that cancer patients presenting with anaemia had increased mortality [27,28]. A study in England confirms strong association between IDA and colorectal cancer has increased risk of CRC as the haemoglobin falls [29]. In this study, moderately raised ESR is found in all CRC patients. It has been found that the ESR is often increased in malign diseases [30]. A study shows high ESR affiliates with worse prognosis of CRC patients [31]. Other haematological parameters i.e., WBC and platelet counts insignificantly disturbed in these patients, that indicates a factor of good prognosis. Two other studies found the worse prognosis of CRC patients who had increased platelet [32] and WBC counts [33].

This study analyses parameters in CRC patients at the time of diagnosis and before treatment, follow up of these patients before and after cancer treatment and inclusion of iron supplements and other procedures may provide more data that will be useful in association among parameters and CRC prognosis.

CONCLUSION:

A significant prevalence (31%) of CRC among various cancer patients was found in this study. Two haematological parameters, i.e., Hb and ESR are found significantly abnormal in subjects. Hb and ESR parameters are inexpensive modes of investigations and are very important indications of CRC disease and its prognosis.

Conflict of Interest:
The study has no conflict of interest declared by any author.

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