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Clinical and Pathological Characteristics of High Grade Colorectal Adenocarcinoma at Hasanuddin University Hospital, Indonesia, 2015-2020

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Abstract

Colorectal cancer is one of the most common cancers and the fourth leading cause of cancer-related death in the world. According to the type of histopathology, more than 90% of colorectal carcinomas are adenocarcinomas which are grouped into low grade and high grade based on their grading. Identification of characteristic groupings based on grading is still rarely done in Indonesia, especially in Makassar. This study aims to determine the clinical and pathological characteristics of high grade colorectal adenocarcinoma at Hasanuddin University Hospital, Makassar from January 2015 to December 2020. This study used a descriptive method. The sample used was a sample that was diagnosed histopathologically as high grade colorectal adenocarcinoma and met the inclusion criteria then selected by total sampling and also used data from medical records. The distribution of data in this study is classified based on age, gender, tumor location, clinical symptoms, and tumor stage. Descriptive statistical calculations were performed using SPSS 20 for Windows software. There were 98 samples, most of which were at the age of ≥50 years, as many as 32 samples (32.7%) with man as many as 60 samples (61.2%). The most common location was in the rectum as many as 38 samples (38.8%) with the most clinical symptoms were bowel disorders as many as 68 samples (69.4%) and stage 3 was the most cases with 35 samples (35.7%).

Keywords: Adenocarcinoma; colorectal; high grade; characteristics.

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1. Introduction

Colorectal cancer (CRC) is one of the most common cancers and the fourth leading cause of cancer-related death in the world [1, 2, 3] and the second most common cause of cancer death in the United States [4]. Globally 1.4 million new cases of CRC and nearly 700,000 deaths were recorded worldwide in 2012 and are expected to increase by 2030 by 60% [2, 5]. Based on data from Globocan, the International Agency for Research on Cancer in 2020, the incidence of CRC in Indonesia in 2020 by WHO was 34,783 (8.8%) cases, with the number of new cases affecting men at all ages as much as 21,764 (11.9%) and more slightly in women as many as 12,425 (5.8%) [6]. Now there has been an age shift, namely at a younger age due to an unhealthy lifestyle. Until now the cause of CRC is not known with certainty, there are several risk factors that cause it, namely genetics, lack of physical activity, obesity, high-fat and low-fiber diet, smoking, and excessive alcohol consumption [7, 8]. CRC is a malignant tumor that arises from the epithelial tissue of the colon or rectum. Based on the histopathological classification of CRC by WHO and recommended by the College of American Pathologists, the majority are adenocarcinoma no special type [9], which is more than 90% of cases from various studies that have been carried out [5]. High grade colorectal adenocarcinoma is a pathologist's diagnosis based on microscopic examination showing proliferation of the colorectal gland epithelium with glandular formation of less than 50% of the tumor mass that has invaded the basement membrane with atypia, pleomorphic nuclei, coarse chromatin, and prominent nucleoli [10]. In Indonesia, CRC cases, especially colon adenocarcinoma, are often only discovered when the cancer has entered a more advanced stage. This is due to the lack of public knowledge about cancer and only check themselves to health care providers when there are symptoms that are very disturbing activities [11]. The prognosis of colonic adenocarcinoma is determined by the stage of the cancer, which is the extent to which the cancer cells invade. The longer it is left without treatment and treatment, the greater the chance that the cancer will metastasize to other organs and will worsen the prognosis. Cure rates and survival depend on the stage of CRC. Cancer staging classification is used to determine the extent or extent of cancer and the prognostic value of the patient. The most widely used system is the TNM classification of malignant tumors, eight edition, Union for International Cancer Control (UICC) system in 2017 [12]. Based on the explanation above, this study aims to determine the clinical and pathological characteristics of high grade colorectal adenocarcinoma with parameters such as age, gender, location, clinical symptoms and stage at Hasanuddin University Hospital, Makassar for the period January 2015 to December 2020.

2. Materials and Methods

In this study, 98 samples that were diagnosed histopathologically as high grade colorectal adenocarcinoma and met the inclusion criteria were then selected by total sampling and also the tools used in data collection were medical records collected from the Anatomical Pathology Laboratory, Hasanuddin University Hospital, Makassar for the period January 2015 to December 2020. Parameters assessed in this study obtained data from medical records and microscopic images, namely: 1) Age, classified into <50 years and ≥50 years; 2) Gender, man or woman; 3) Location of the tumor, is the location of colorectal cancer suffered by the patient at the time of diagnosis, namely caecum, ascending colon, and transverse colon, descending colon, sigmoid colon or rectum; 4) Clinical Symptoms, defined as disturbances or complaints felt by patients with high-grade colorectal

adenocarcinoma and 5) Stage, the grade of colorectal cancer experienced by the patient based on the criteria for microscopic expansion of tumor invasion, involvement of nodules and extension of metastases which are divided into Stage 0, Stage I, Stage II, Stage III, and Stage IV. The data in this study were processed using descriptive statistical techniques using SPSS 20 for Windows software.

3. Results

From this study, 98 samples diagnosed with high grade colorectal adenocarcinoma collected from the Anatomical Pathology Laboratory of Hasanuddin University Hospital Makassar from January 2015 to December 2020 obtained results as shown in table 1.

Table 1: Distribution of characteristics patients with high grade colorectal adenocarcinoma at Hasanuddin University Hospital Makassar, Indonesia 2015-2020**.**

Characteristics	N = 98	Percentage(%)
Age (years)		
<50	32	32.7
≥50	66	67.3
Gender		
Man	60	61.2
Woman	38	38.8
Location		
Caeccum	11	11.2
Ascendens colon	25	25.5
Transverse colon	6	6.1
Descendens colon	14	14.3
Sigmoid colon	4	4.1
Rectum	38	38.8
Clinical Symptoms		
Defecation disorder	68	69.4
Weight loss	23	23.5
Abdominal pain	7	7.1
Stage		
1	30	30.6
2	30	30.6
3	35	35.7
4	3	3.1

4. Discussion

This study is focus to evaluate CRC cases which was histopathologic diagnosed as high grade colorectal adenocarcinoma, using 4 parameters, namely age, gender, location and stage. Based on the data in table 1, it was found that the highest age prevalence of high grade colorectal adenocarcinoma patients was at the age of 50 years, as many as 66 samples (67.3%), the minimum age was 20 years, the maximum age was 88 years, the

average age was 57 years. and middle age is 60 years. This finding is in accordance with most of the epidemiological studies of CRC that have been studied previously, such as at Adam Malik Hospital, North Sumatra, Indonesia, which reported that the incidence of CRC was more common at the age of 50 years (64.2%) [9]. Similarly, El-Shami and his colleagues also stated that the incidence of CRC was higher at the age of 50 years and over compared to the age of 20-49 years [10]. From the research of Nursakti and his colleagues it was seen that there was an increase in the number of cases of high grade colorectal adenocarcinoma from 9 [11] to 98 cases in Makassar. The results of the study of Paulus and his colleagues stated that overall CRC patients are increasing and there is a shift in the mean age rate towards a younger age from the mean age of 72 years for diagnosis in the early 2000s to 66 years today [2]. Early CRC is often asymptomatic [2] and sometimes tumor development is slow, this makes patients careless and does not immediately seek medical attention, causing delays in diagnosis and often being diagnosed when they are 50 years of age, or due to their genetic and medical history, including personal or personal history, family history of CRC or adenoma (precancerous polyps) and personal history of long-term chronic inflammatory bowel disease. Screening is therefore an important reason if you have a medical or family history of risk and should start CRC screening before the age of 45 years [2]. Based on gender of patients with high grade colorectal adenocarcinoma, the highest number was found in man, there are 60 samples (61.2%) compared to women with 38 samples (38.8%). Wahidin and his colleagues in their study stated that man were more likely to develop CRC (4.13 per 100,000) than woman (3.15 per 100,000) [13], as well as in Germany, the risk of developing CRC was 1 in 14 (6.9 %) in man and 1 in 18 (5.7%) in woman [14]. Similar to other studies, Purim and his colleagues stated that the age-specific incidence rate for CRC increases with age, especially in man who are more frequently affected [15]. The incidence in man is thought to be due to smoking habits and high alcohol consumption as well as the influence of sex hormones [8]. Indonesia as developing country with most population are moslem, smooking habits look like more dominant than alcohol consumption, because of its prohibited in islamic religion. The sex hormon is related to levels of estradiol which in normal amounts works in fertility and spermatogenesis but if the levels are excessive, there will be excessive secretion of gonadotropin proteins such as LH so that testosterone secretion decreased. High testosterone levels have been shown to be associated with a reduced risk of colorectal cancer [16]. For practical purposes, location of CRCs are divided into three groups are 1) Right-sided or proximal colon carcinomas (including those in the cecum, ascending colon, and transverse colon), 2) Left-sided colonic carcinomas (located anywhere from the splenic flexure to the sigmoid), and 3) Rectum. Most of the CRC involved the left side or rectum [12]. In this research we found that high grade colorectal adenocarcinoma, most of them were in the rectum as many as 38 samples (38.8%) but followed by the right side of the colon and then the left side of the colon. It is important to know the location of the tumor to know differences regarding the molecular background of CRC, screening strategies, due to metastasis, therapy, and surgical complications [12]. The location of CRC have closed relation with clinical symptoms. This research showed that the most common clinical when the patients went to clinician were bowel disorders such as bloody stools, constipation and diarrhea (69.4%), then followed by weight loss (23.5%) and the least symptom was abdominal pain as much as (7.1%). This can be caused by risk factors in the form of an unhealthy diet, frequent eating of red meat and processed meat, lack of fiber [12]. Left-sided colorectal tumors usually present with altered bowel habits such as diarrhea, increased frequency, and bowel obstruction secondary to progressive luminal narrowing, rectal bleeding or mucus, or tenesmus. Right-sided colorectal tumors may present more quietly with weight loss, abdominal pain or mass in the right abdomen, and

iron deficiency anemia develops. Carcinoma of the rectosigmoid region shows symptoms of tenesmus or pain during defecation, and hematochezia [17]. Bloody stools are also usually the result of mechanical trauma associated with the passage of solid faeces over the tumor surface [18]. Based on the stage of high-grade colorectal adenocarcinoma patients, the most cases were stage 3, which was 35 cases (35.7%), then stage 1 and 2 were 30 cases (30.6%), and stage 4 was the group with the lowest number of cases, which was 3 cases (3.1). %). The survival rate for CRC cases varies based on several factors especially stage [19] depending on the CRC staging according to the UICC. The 5-year survival rate of patients with stage 1 CRC is 93.2% where microscopically the tumor has invaded the submucosa or muscularis propria layer and no lymph node or distant metastases were found. The 5-year survival rate of patients with stage 2 CRC is 84.7% – 72.2%, where the tumor has invaded the subserosa and even has directly invaded other structures or organs but still no lymph node or distant metastases are found. The 5-year survival rate of patients with stage 3 CRC is 83.4%-52.3%, in which 1 to more than 7 lymph node metastases have occurred, but distant metastases have not occurred. The 5-year survival rate of patients with stage 4 CRC is 8.1%, in which distant metastases have occurred [12, 20]. Relapse rate, survival, and therapeutic management depend on the stage of CRC. Diagnosis and staging are very important to ensure the correct treatment strategy. In the last 10 years the CRC mortality rate has decreased by more than 20% due to the increasing development of diagnostic techniques and optimizing surgery, chemotherapy, targeted therapy, immunotherapy, as well as palliative therapy. Colonoscopy plus biopsy for histopathological examination is considered the gold standard for diagnosing colorectal lesions [20, 21].

5. Conclusion

Most of the cases were at the age of ≥50 years and were man with the most common location of the tumor being in the rectum which gave the most clinical symptoms were bowel obstruction and stage 3.

6. Suggestion

Further research is needed with a larger sample size and more diverse variables.

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