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Adenocarcinoma Of Colon In Young Female Patient- A Rare Case Report

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ABSTRACT:

Colorectal cancer (CRC) is a common cancer worldwide with a low reported incidence in India. There is significant geographical variation in the incidence rates, and the presentation may also vary.The commonest symptoms are rectal bleeding (57%), pain (44%), and altered bowel habits (26%). Majority of these cases present in advanced stages, further making the outcomes worse. This combination of delayed presentation and poor prognosis is not acceptable in a cancer which is largely preventable and has established and effective screening methods. CRCs have high cure rates if diagnosed and treated in early stages.

Adenocarcinoma is the most common form of colorectal cancer (>95%). Rarer subtypes include carcinoid tumor, sarcoma, and lymphoma; these present differently from adenocarcinoma. Many factors may be responsible for the development of this disease, including genetic and environmental factors. Increasing age, male gender, and a family history of colorectal cancer are the greatest risk factors for the disease.

Since ancient times cancer-*arbud* has been considered a deadly and incurable disease and critical for treatment. It is described in *Veda* and *Ayurveda* the most ancient texts. *Arbud* is described as a deadly and incurable disease, at present time the prevalence of cancerous diseases is very high and alarming. In general, *Arbud* is equated with cancerous diseases and it is worthy in view of the concept of cancer. Tumor or *Arbud* is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.

Here I am discussig a case of adeninocarcina of colon in female patient which is very rare in young age who later on underwent surgery.

KEY WORDS: Cancer-*Arbud*, Colorectal carcinoma, Adinocarcinoma, microsatellite instability (MSI), genetic factors

Introduction

Adenocarcinoma is a malignant neoplasm arising from epithelial cells of the glands or glandular like structures. Adenocarcinoma can arise in multiple sites of the body. Some of the common sites that develop adenocarcinoma are the breast, lung, prostate, and gastrointestinal tract, like the colon, rectum, pancreas, stomach, and esophagus. Adenocarcinomas also make up 70 percent of cancer of unknown origin.[1]

It is the third most commonly diagnosed cancer in males and the second in females, with more than 1.4 million new cancer cases every year.[2] There is a consistent rise in the incidence of colon cancer across all Indian cancer registries, ranging from 20% to 124% per year.[3] Mortality is higher in the less developed countries who have limited resources and inadequate health infrastructure. Mortality rates have been decreasing in many Western countries due to a combination of various factors like early detection due to screening and improved treatment of CRC.[4]

The age standardized rate (ASR) for CRC in India is low at 7.2 per 100,000 population in males and 5.1 per 100,000 population in women.[5] However, in a country with a population of a billion plus people, the absolute number of patients suffering from CRC is large. Five-year survival of CRC in India is one of the lowest in the world at less than 40%. In fact, the CONCORDE-2 study reveals five-year survival of rectal cancer in India is actually falling in some registries.[6] Incidence rates have been decreasing in Western countries, mostly due to the widespread use of colonoscopy screening. However, the condition's incidence among younger adults is increasing.[7]

The transition from normal colon epithelium to invasive cancer takes several years and most commonly follows a sequence characterized by the accumulation of genetic mutations, adenoma formation, and subsequent carcinogenesis (adenoma-carcinoma sequence).[8,9,10] Certain cancers may follow alternative pathways, such as those involving DNA mismatch repair (MMR) and the *BRAF* gene.[11]

Almost in all classical texts the *arbud* is featured as a disease with mass or swelling. Cancer is neither contagious or hereditary disease; it is caused due to genetic disorder which is the nuclear factor. It is suggested that every living organism has some inactive cancer-causing genes called proto-oncogenes. Several physical, chemical, or biological agents are known to mutate and activate these proto-oncogenes into active and cancer-causing oncogenes. Due to altered gene activity, normal control mechanisms are lost and the abnormal cell growth and cell division take place.[12]

In *Ayuvedic* text *acharya Charak* has manifested three genetic units *Beej*, *Beejbhag* and *Beejbhagavyav*. *Ayurvedic* scholars resembles *Beeja* with germinal cells like *Shonita* (ovum) in females and *Shukra* (sperm) in male. *Beejbhag* is part of the *Beej* and is compared to the chromosomes in today's scenario. These are responsible to carry out the trait from one generation to another. *Beejbhagavyav* is the most fundamental entity carrying hereditary characters and compared with the genes and DNA material. At molecular level, concept of *Beeja, Beejabhaga* and *Beejabhagavyava* are introduced by *acharya* and have been well explained by *Ayurveda* scholars. According to *Acharya Charak* aggravated doshas may afflict the ovum and sperm which is responsible for the production of particular organ[13].

Thus vitiation of *Beeja, Beejbhag* results in deformation of related organs of progeny (somatic as well as genetic anomalies of progeny)[14]

Beeja: Beeja are of two types, viz *matruja* (female gamete or ovum or oocyte) and *pitruja* (male gamete or sperm or spermatozoa) *Beeja* carries one set of genetic material necessary for formation of the offsprings. Dushti of either *matruja or Pitruja beeja* due to vitiated *Dosha*, causes formation of defects in the foetus[15]. *Pawkashaya* (colon) included in is the *matruj Koshthanga* (soft) organ, is by *Charaka*[16], *Kashyap*[17] and *Sushruta*[18], and is the *Moolsthan* of *Purishvah strotas*. In malignant tumours all three systems get out of control *(Tridoshas)* and lose mutual coordination that causes tissue damage, resulting critical condition. *Tridoshas* cause excessive metabolic crisis resulting in Proliferation[19].

Adenocarcinoma of the Colon/Rectum

Environmental and genetic factors increase the risk of colorectal cancer. Many hereditary colorectal cancer syndromes like the familial adenomatous polyposis(FAP), Lynch syndrome (hereditary nonpolyposis colon cancer or HNPCC), and other non-Lynch syndromes like the biallelic MUTYH, BRCA1/2, PALB2, CDKN2A, TP53, FAP increases the risk of colorectal cancer.[20,21,22] Other risk factors include personal or family history, inflammatory bowel disease, red and processed meat, tobacco use, and alcohol also increase the risk.

CASE PRESENTATION

A 32yr female patient came in Shalyatantra opd 3 with complaint of pain in abdomen since 4 month. When she started developing pain in abdomen, it was mainly in umbilical region and right iliac region which was insidious in onset, progressive in nature, aggrevated after taking food and relieved after taking medication. But pain started after stopage of mediaction. Pain was associated with constipation and wt loss.

No history of nausea, vomiting, fever, pr bleed or any other bleeding tendency, past history of TB/DM/HTN, family history of same complaint

Personal history of - burn due to kerosene oil flame in 2007 (before 17 yr)

Menstrual history- menarche at age of 13, regular cycle 28 days of 5-6 days

Further investigation was done;

Usg (A+P) (13/06/24)

There is ileo colocolonic non-obstructing intussusception noted with high placed significantly irregular nodular hypoechoic thickening of caecum and adjacent ascending colon with adjacent small nodes. Histopath / colonoscopy is essential as high possibility of underlying polypoidal mass lesion.

CT (A+P) (18/06/24)

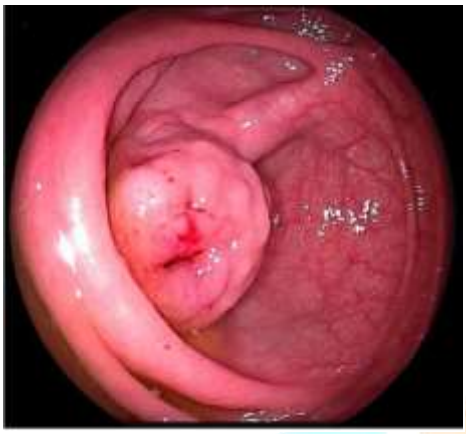
Bowel in bowel appearance noted in the right iliac fossa region with ileo-cecal intussusception with high location of the ileo-cecal junction. Additionally short segment ceco-cecal intussusception alsoseen. No abnormally enhancing obvious mass lesion noted.

The orally administered contrast is faintly seen reaching the cecum. No dilation of the distal ileum or rest of the proximal small bowel to suggest obstruction. The ascending and transverse colon show fecal matter and gas within. The descending and sigmoid colon are collapsed. Rectal gas noted.

No obvious bowel wall ischemia in the cecum or the ileum.

COLONOSCOPY (19/06/24)

A large exophytic growth in the caecum occupying whole lumen of caecum, ileocecal junction can not be identified. Clearcut intususceptin could not be identified.



Histopath of small biopsy taken in colonoscopy

Poorly differentiated adenocarcinoma. The patient underwent a **right hemicolectomy** on 21/06/24, Excised sample of colon send for HPE

Right Hemicolectomy HPE Report

Moderately Differentiated Adenocarcinoma of the Caecum. Margins of resection are free of tumour. Regional lymph nodes are negative for metastasis. TNM stage: pT3N0.

Immunohistochemistry (MSI testing- Microsatelite instability)

1. MLH1:Loss of nuclear expression.
2. MSH2: Intact nuclear expression.
3. MSH6: Intact nuclear expression.
4. PMS2: Loss of nuclear expression.

Impression:

Loss of nuclear expression of mismatch repair (MMR) proteins (MLH1 and PMS2): Deficient mismatch repair protein (dMMR) i.e. high probability of microsatellite instability high (MSI-H)

DISCUSSION

Routine screening colonoscopies have considerably decreased the overall incidence and mortality of CRC in the last few decades. But for patients under the age of 50 years, the incidence rate of CRC has increased in the past three decades .[23,24] Colorectal cancer is a common cancer worldwide with a majority of cases occurring in the developed countries. India has a low prevalence of CRC—estimated five-year prevalence is 87 per 100,000 population. Differences in dietary patterns and lifestyles are thought to be responsible for the low incidence of CRC in the developing world. Also, prevalence of obesity which is a risk factor for CRC differs in the developed and the developing world. Another possible reason for low

incidence can be a younger population—CRC is more common in the elderly. It should be noted that the population registries in India cover only 7.45% of the population, while worldwide cancer registries cover 21% of the population; so, some amount of under reporting may be possible in India.[25]

In India, some registries have shown decreasing trend/stable incidence while others have shown an increasing trend for rectal cancer.[26] The six population-based registries have shown an increase in the rates of colon cancer[27]. CRC is often asymptomatic but may present with red-flag symptoms such as unexplained anemia, and rectal bleeding. Young-onset CRC patients predominantly present with hematochezia, change in bowel habits, abdominal pain, anemia, and weight loss. [28]

In causation of Arbuda along with Mithyaahar and Vihar i.e. non-Beneficial food and activities, two significant causes are described by Acharya Sushruta are as, Constant trauma/ irritation and regular intake of non-vegetarian food; both these provocative factors are proved for causation of cancer[29].

Ayurveda scholars also explained *Shad Garbhakara Bhavas* (six pro-creative factors) such as *matruja* (maternal), *Pitruja* (paternal), *Atmaja* (soul), *Rasaja* (nutritional), *Satmyaja* (wholesomeness), and *Sattvaja* (psyche/mind) for the birth of healthy progeny. The conglomeration of these procreative factors is a must for healthy progeny. The physical, mental, social, and spiritual well-being of the person, proper nutrition of the mother during pregnancy, and practice of a wholesome regimen play a prime role in achieving a healthy offspring. According to Ayurvedic principles, the disease cannot be named on its own because it differs between persons in terms of illness, clinical presentation and also the treatment required. Thus, pathogenesis in Ayurveda is explained on the basis of *Tridoshas*. *Agni* or *Pitta*, which is present in each and every cell, is responsible for digestion and metabolism in human body. The decrease in *agni* is inversely proportional to the related tissue and therefore in *arbuda*, the decreased state of *dhatwagni* (deranged metabolism) will result in excessive tissue growth.

CONCLUSION

CRC is one of the most common and deadly tumors, and among risk factors for the development of this cancer, genetic predisposition plays an important role. The incidence and mortality of CRC is high and increasing year by year. Although early diagnosis can significantly improve the prognosis, CRC patients often have no typical clinical manifestations or exhibit only non-specific signs in the early stage, and there are shortcomings in the currently used clinical screening and diagnosis methods, resulting in a low rate of early diagnosis of CRC. Therefore, it is of great value for the diagnosis and treatment of CRC to find CRC screening and diagnosis methods with safety, compliance, high sensitivity and specificity, and a good economic benefit ratio. The prevention methods of CRC include: (i) diet—intake of fresh vegetables, fruits, crude fiber food, appropriate minerals and trace elements such as calcium, magnesium, and vitamin D; (ii) lifestyle management—quitting smoking, limiting alcohol consumption, proper exercise, and weight control; (iii) active treatment of benign colorectal diseases, such as polyps, adenomas, ulcerative colitis, and Crohn's disease; (iv) regular screening—early screening to prevent CRC is very important.

It is proposed that the genotype and phenotype correspond to Ayurvedic *Janma* (birth) *Prakriti* and *Deha* (body) *Prakriti* (psychophysiological constitution), respectively. Imbalance or disorder of the *Deha Prakriti* is known as *Vikriti* and corresponds to disorders and diseases in the current medical system.There are four major factors that a ect the phenotype or *Deha Prakriti* in a positive or negative way, depending on what one does in one's life. These four factors are lifestyle and behavior, diet and digestion, stress, and environmental factors. These factors produce changes in the phenotype or *Deha Prakriti* that a ect the expression of the genotype, the *Janma* (birth) *Prakriti,* without changing its basic structure. *Pakwashaya* mentioned in ayurveda, if compared with modern anatomical structure then *Pakwashaya* are present entire part of large intestine i.e. caecum to rectum.

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