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Commentary on the Metastatic Colorectal Cancer: Review of Diagnosis and Treatment Options

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Description

According to the World Cancer Research Fund International, Colorectal Cancer (CRC) is the third most prevalent neoplasm in the world, with 1.4 million cases diagnosed in 2012, and the second leading cause of death. CRC was responsible for 19.05 deaths/100.000 persons in Romania in 2002, with an incidence of 17.74 cases/100.000 inhabitants in 2000. Alcohol misuse, decreased physical activity, obesity, an imbalanced diet (low in fibres, high in fats), a personal or familial history of polyps, and inflammatory bowel disease are all established risk factors for the development of CRC. 95 percent of CRCs are adenocarcinomas, according to histopathology. Approximately one-fifth of individuals arrive with Metastatic Cancer (mCRC), and 30% to 50% develop it.

At the time of diagnosis, an advanced state of the original lesion with lymphatic or vascular invasion, high levels of the Carcinoembryonic Antigen (CEA), gene alterations, and aggressive cellularity are all risk factors for metastatic illness. Without therapy, the median survival interval for CRC is fewer than 8 months, with longer intervals in the case of individuals with a restricted number of organs.

The goals of systemic treatments are to enhance survival rates and to provide a high quality of life. The most commonly used drugs in mCRC adjuvant therapy are the chemotherapy agents 5-fluorouracil (5-FU), oxaliplatin, irinotecan, capecitabine, and the biological agents bevacizumab, panitumumab, and cetuximab, which act either against angiogenesis (Bevacizumab) or inhibit the endothelial growth factor receptor (Pantitumumab).

Over the last few decades, the cellular and molecular pathways of the metastatic process in CRC have been extensively studied, and their understanding has materialised in the form of a new generation of antitumoral drugs such as bevacizumab, an anti-VEGF antibody that has been shown to increase survival rate.

Metastases to the liver: The liver is the most often implicated organ in mCRC and is typically the solitary site of metastasis in CRC, both at the time of initial diagnosis (20–25 percent of patients) and following excision of the main tumour (40 percent of cases). The metastatic process of the liver in CRC comprises a number of stages, including lysis of the extracellular matrix: Cancer cells' enzymes change the extracellular matrix and Allow cancer cells to migrate away from the main tumour. Cancerous cells can disregard integrin signalling and persist in the absence of extracellular matrix interaction.

Angiogenesis

The expression of the in some CRCs is enhanced. Platelet-Derived Growth Factor (PDGF) and Vascular Endothelial Growth Factor (VEGF) PDGF (Platelet-Derived Growth Factor), a key angiogenic factor having a bleak prognosis The development of a vascular network was caused by tumour cells is ineffective, fragile, and hemorrhagic. VEGF and PDGF, in conjunction with fibroblastic growth FGF and hepatocyte growth factor

Dissemination, invasion, and colonisation of distant organs, followed by growth: because of portal circulation and the architecture of the fenestrated sinusoid network, the liver is the most involved organ.

Metastases of the Lung: Lung metastases in CRC occur in 10% to 30% of all patients 5-60 months after original tumour excision. Tumor cells enter the lungs via haematogenous dissemination or, less commonly, lymphatic dissemination. In contrast to the liver, the lungs are only affected in 2-4 percent of patients. Lymphatic spread from a neighbouring lesion causes mediastinal adenopathies.

Metastases of the Bone

The incidence of bone metastases in CRC ranges from 6% to 10.4% depending on the research, with a median period of discovery of 11-21 months following original tumour excision. In all of the studies evaluated, bone metastases were linked to lung and/or liver metastases. Metastatic lesions, which are generally numerous, develop as a result of hematogenous dissemination and most commonly affect the The axial skeleton as well as the proximal portions of the limbs They are found in the dorsal and lumbar spines, sacrum, pelvis, ribs, sternum, proximal femur and humerus, and skull, in decreasing order. Metastatic bone loss is mediated by osteoclasts, which are triggered by tumour cells that release an osteoclast activating factor. Mundy et al. classified this process into four stages: tumour cells attach to the basement membrane; tumour cells generate proteolytic enzymes that modify the basement membrane; tumour cells move through the basement membrane; and tumour cells increase the activity of osteoclasts.

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