CANCER OF THE RECTUM

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WHAT IS THE RECTUM?

The rectum is the terminal tract of the bowel, which is situated right above the anus. Its length varies between 12-15cm, and it is called rectum because its shape and position are roughly rectilinear and vertical.
It is divided into three parts of about 4cm each. The high or proximal rectum which is situated inside the peritoneum; the medium and low rectum (distal rectum) which are outside the peritoneum (retroperitoneal) and surrounded by a thick layer of fat, inside there are vases, nerves and lymphatic glands.
Its walls are made up of three layers superimposed one upon the other:

- The internal, RECTAL MUCOSA or MUCUS LAYER, full of glands where the majority of neoplasias of this organ, have origin
- The intermediate, SUBMUCOSA full of lymphatic vases and groups of clusters of lymphocytes, venous and arterial vases...
- The external, PROPER MUSCULAR. The muscular bundles merge without discontinuity with the internal or smooth, involuntary anal sphincter, and with the elevator muscle of the anus.

The functions of this intestinal tract are various:

1) Temporary repository for faeces.
2) Sensorial organ, which is able to discriminate the quality and the quantity of its contents (Therefore involved in the sphincter functions and the function of faecal continence
3) Propulsive and expulsive capacity during defecation.

WHAT IS CANCER OF THE RECTUM?

Carcinoma or cancer of the rectum is a malignant tumor that originates from the cells of mucus (the internal layer of the wall). The most frequent precancerous lesion is the polypus that in a certain percentage of cases evolves into cancer. At times the carcinoma originates directly from the rectal mucus.

WHAT IS THE FREQUENCE AND WHAT ARE THE CAUSES?

It represents 30-35% of tumors of the big bowel, which in turn, represent 10% of all cancers.
The absolute incidence seems to have slightly been increasing in European countries since 1976, and its increase is relative to age.
In Italy there are 40 people affected for every 100.000 inhabitants per year, with 12.000 new diagnosed cases of carcinoma of the rectum every year and 7000 deaths.
Etiology is a process of genetic alteration of the epithelium cells of the mucus and the factors that flare up or favour these alterations make up the pathogenesis.
They can be divided into:
primary risk factors:

1) A diet poor in fibre and rich in fat in particular animal fat.
2) Abuse of alcohol and tobacco.
3) Menopause (females)
4) Obesity and little physical activity

secondary risk factors:

1) Age 50 and over.

2) Intestinal polypus, in particular familiar adenoma polypus (FAP) and the less serious form, which are hereditary.
3) Hereditary cancer of the colon HNPCC or Linch's syndrome II and I.
4) Family or personal anamnesis for polypus or for cancer of the rectum.
5) Chronic inflammatory disease of the big bowel in particular ulcerative recto colitis
6) Pelvic irradiation.

HOW TO PREVENT IT? (SCREENING)

The primary form of prevention is the avoidance of all foods that present risk factors and a life style as described above.
For men and women without secondary and asymptomatic risk factors, a check up (digital exploration of the rectum) and a test of the faeces (for occult blood) is recommended every year after the age of 40.A thorough examination of the rectum and the colon with colonoscopy, is recommended every 3-5 years after the age of 50 and if negative it is to be repeated every 5-10 years (only in the absence of symptoms).
For people that present an elevated secondary risk, an examination of the colon with endoscopy should be carried out around the age of 40. (Polypus, familiar polypus, cancer of the colon rectum, inflammatory diseases, personal anamnesis of polypus and cancer) and before the age of 25 (FAP; HNPCC) and repeated every 5 years.
Women who have a history of carcinoma of the breast, ovary or the uterus, are suggested to have a colonoscopy every 3-5 years from the age of 40.
These recommendations are general and not always agreed on by all, therefore it is considered useful to discuss the possibility of a screening with one's own doctor. It is important to underline that the first colonoscopy as a form of screening (after 40) is exempt from payment.

WHAT ARE THE SYMPTOMS?

The most common symptom, and at times it is the only one, is **the loss of fresh red blood** from the anus. This symptom is often associated to benign pathologies (e.g. haemorrhoids) that could however, be present with cancer. Bleeding from the anus can be modest and accompany defecation (**HAEMATOCHEZIA**), or more abundant (**RECTORRAHAGIA**), not necessarily linked to defecation.
Other symptoms are:
- Alteration of the ***alvus*****:** costiveness alternated to diarrhea, with small and frequent discharges, reduction of the size of stools that assume a ribbon form.
- ***Tenesmus*****:** The feeling of having to defecate without the passage of stools, **urgency to have a movement** (that can sometimes be painful), and a **feeling of incomplete emptying** at the end of evacuation.
- ***Perineal and pelvic pain*** which is usually a late symptom and is more frequent in tumors of the low rectum.

HOW IS IT DIAGNOSED?

In the majority of cases the anamnesis (clinical history) and a clinical examination with digital exploration of the anus rectum, are sufficient. In this way, lesions of the low and medium rectum can be detected through.
A*noscopy* (vision of the anus and of the distal rectum by means of a cylindrical instrument called anocope) allows complete vision and excludes an anal disorder. (Haemorrhoids, rhagades ect.).
Rectoscopy with a rigid or flexible instrument allows exploration of the terminal 15-20 cm of the big bowel.

Opaque enema and colonoscopy are investigations that complete the study of the bowel and are however recommended to patients who have had a blood loss with or without defecation, and in which both the protocologic examination and rectoscopy resulted negative.
If a lesion is spotted during examination, a biopsy must be carried out, this will later be analyzed by an anatomy pathologist who will be able to give a diagnosis of the nature of the lesion.(if it is malignant or not.)
When it has been confirmed that there is a rectal carcinoma, it is necessary to carry out investigations that determine the spreading of the disease (clinical phase) that is the spreading to local areas (the rectum and other adjacent organs) and to distant areas (lymph nodes, liver, lungs, principally.)

- Colonoscopy complete if possible, or opaque enema (double contrast CODC) in order to study the large bowel.
- Total body CAT (computerized axial tomography of the thorax and abdomen)
- End rectal ecotomography (if possible).
- *Haematochimic* test of *hepatic functionality*
- Haematic dosage of the CEA (carcinoembryogenetic antigen).

On the basis of such investigations, adequate treatment will be planned for the patient who has a rectal carcinoma at that stage.

HOW CAN IT BE CURED?

The treatment for rectal carcinoma consists in surgical ablation of the affected part; surgery is carried out through the abdomen in the majority of cases (resection of the rectum). After resection, the tract of the colon above, is lowered and attached to the resected part of the rectum (*anastomosis*) by suture (manual or mechanic) directly to the anus (colon- anal *anastomosis*), if the tumor is located in the inferior rectum, or to the stump of residual rectum (colon rectal *anastomosis*), if the carcinoma is in the medium or superior part. When the anastomosis is very near to the anus there is a risk of partial or total collapse and therefore the majority of surgeons, carry out in these cases, a deviation of the above faeces (colostomy or *ileostomy*) so that if there is dehiscence of the anastomosis, the faeces can not pass through it and this does not cause a peritonitis. The stoma in these cases is only temporary, and is later closed, reestablishing a normal canalization, 2-3 months after the main operation.
In particular cases, (10-20%), e.g. when the neoplasia infiltrates the anal sphincters, it isn't possible to preserve the anus, which will also be taken out. In this case the operation is called resection of the rectum via abdomen-perineum, and foresees an abdominal time and a perineal time during which the anus is removed with the anal sphincters. With this kind of surgery a definite colostomy is created, next to the left cavity of the ileum. It is also possible to create a colostomy in the past location of the anus, and rebuild the musculature of the anal sphincter with a muscle of the thigh. This reconstruction that foresees more than one surgical intervention, is called operation of Cavina, and although it is difficult to carry out, and not always the results are excellent, is adopted by some surgeons.
For big villous polypuses of the rectum (with a large basic structure) and for carcinomas at an initial stage, it is possible to remove the tumor itself therefore preserving the rectum, with a margin of healthy tissue through the anus (transanal resection).

Although surgery is fundamental in the treatment of tumors of the rectum, nowadays a combination of complimentary treatments (radiotherapy and/or chemotherapy) is adopted in addition to surgery. The choice depends on the stage of the disease and on the conditions of the patient.

WHAT IS STAGING AND THE STAGE OF THE DISEASE AND WHAT IS ITS IMPORTANCE?

The staging of a disease is the estimation of the extent of the tumor in spreading into the organism, it is estimated in stages (TNM stages) on the basis of 3 parameters: T (spreading of the tumor into the wall of the rectum), N (spreading to the lymph nodes), M (presence of metastasis in other organs.) Staging is not only important for the estimation of the prognosis but also for deciding the best type of treatment that varies from stage to stage.

Currently, the accuracy of staging before surgical intervention (clinical staging) is around 80%, while staging after surgical intervention (pathological staging) is much more precise. In cancer of the rectum four stages are identified: I II III IV.

Stage I offers the best prognosis with 90-95% permanent recovery, (generally expressed as up to five years of survival after surgery). In stage IV where there is metastasis with other organs, only 5-10% recovers.

CONCLUSIONS

The keystone for the cure of carcinoma of the rectum is prevention and early diagnosis, which detects the presence of polypuses (removal during endoscopic examination.) and of cancer at the early stages. The important factor is, in any case, not to neglect mild symptoms (loss of blood and/or mucus) that are easily mistaken for benign disorders (haemorrhoids, rhagades) and occasional but repetitive alterations of the alvus.