Carcinomatosis

Description

Carcinomatosis is described as a condition in which multiple carcinomas develop simultaneously, usually after dissemination from a primary source. It implies more than spread to regional nodes and even more than just metastatic disease. The term is usually taken to mean that there are multiple secondaries in multiple sites.

Strictly, it should be used only for epithelial cancers or carcinomas and not sarcomas or lymphomas but has been extended to include all types of cancer which have spread. The word is now used to describe conditions with more limited spread, as in:

Leptomeningeal carcinomatosis
- Involvement of leptomeninges through seeding via the cerebrospinal fluid, which occurs either by direct spread or via the bloodstream.
- Any cancer can cause this but adenocarcinomas are most commonly involved.
- Classically presents with multifocal neurological symptoms and signs.\(^1\)
- Diagnosis is based on the evaluation of clinical presentation, cerebrospinal fluid cytology and neuroimaging.\(^2\)
- Uncommon and usually a late complication of cancer.\(^1\)

Pulmonary lymphangitic carcinomatosis
- Diffuse infiltration of the lungs with obstruction of the lymphatic channels.
- May occur with a variety of different cancers, including lung, breast, stomach and large intestine.\(^3\)

Peritoneal carcinomatosis
- Spread of metastases into the peritoneum, usually from ovarian and colorectal cancers.\(^4\)
- The occurrence of peritoneal carcinomatosis has been shown to significantly decrease overall survival in patients with liver and/or extraperitoneal metastases from gastrointestinal cancer.\(^5\)

Presentation

Carcinomatosis may be a progression of known disease. It may be the presentation of recurrence or it may be the primary presenting feature. Presentation will depend upon where is affected.

- In the lungs it may present as shortness of breath and haemoptysis.
- In the liver it often presents as jaundice.
- In the brain there may be headaches, vomiting and neurological features.\(^6\)
- In bones there may be pain or pathological fracture.

Differential diagnosis

When these features present, the question is whether this is part of the known disease or something else. For example, whether jaundice is due to metastatic carcinoma in the liver or to gallstones.

When carcinomatosis is the presenting feature it is usual to seek a primary tumour. Histology may be anaplastic and give no help, although improvements in investigative technology are helping to narrow the differential diagnosis (see below).
Investigations

The purpose of investigations is to confirm the nature of the disease and to assess its severity and extent.

- In cases of unknown primary, FBC may show iron deficiency suggestive of gastrointestinal malignancy, microscopic haematuria may reveal occult genitourinary malignancy and occult blood may point to a colorectal cause. In cases where the primary is known, FBC, U&E, creatinine and LFTs may indicate severity.
- Modern imaging techniques such as ultrasound, CT and MRI scanning as well as older investigations, such as CXR, provide very good information and an exploratory laparotomy is rarely required nowadays.
- It may be desirable to obtain tissue for histology. Techniques now employed to assist with differential diagnosis include:
  - Light microscopy.
  - Immunohistochemistry - peroxidase-labelled antigen is used to identify specific tumour markers (e.g., prostate specific antigen).
  - Electron microscopy.
  - Chromosome studies - these are occasionally helpful (e.g., DNA amplification of Epstein Barr virus in suspected occult nasopharyngeal carcinoma).
- Tumour markers for leptomeningeal metastases have been identified.[7]

Management

Usually there is no realistic hope of curative therapy, although chemotherapy and radiotherapy may have a palliative effect. Surgery may be palliative and 'debulking' of the tumour before chemotherapy may be helpful. Resection of liver metastases secondary to colorectal cancer has had some success in limited disease. There are some subgroups of patients who do relatively well with treatment:

- Multi-modality treatment (intrathecal chemotherapy, intravenous chemotherapy, whole brain radiotherapy and radiotherapy to the spinal leptomeninges) has been seen to improve survival rates in patients with leptomeningeal metastases secondary to breast cancer.[8]

Chemotherapy:

- Lymphatic carcinomatosis can sometimes be stabilised, or at least the progression reduced, by chemotherapy. This may be systemic or via infusion into the cerebrospinal fluid. Radiotherapy may be required if the tumour tissue is bulky or causing symptoms.[9]
- Peritoneal carcinomatosis can occasionally be treated with intraperitoneal and/or intravenous chemotherapy. Treatment can be started postoperatively or chemotherapy drugs can even be instilled in the abdominal cavity during surgery. These approaches have resulted in demonstrable improvements in survival rates.[4]
- Intrathecal trastuzumab seems to represent a safe and, in some cases, effective option for the treatment of HER2-positive breast cancer patients with leptomeningeal involvement.[10]

Embolisation

- Transcatheter arterial chemoembolisation (TACE) has resulted in a successful outcome, particularly in patients with neuroendocrine tumours and colorectal metastases. A microcatheter is inserted into the hepatic blood supply and a combination of chemotherapeutic agents and embolic agents is injected. Radioembolisation promises to serve an expanding role in the treatments available for treating and managing metastatic disease.[11]

Radiotherapy

- Palliative radiotherapy can often be used to:
  - Reduce or eliminate pain from bone metastases.
  - Palliate brain metastases.
  - Relieve spinal cord compression or compressive symptoms from visceral metastases (e.g., airway or gastrointestinal obstruction).
  - Control bleeding - e.g., haemoptysis or haematuria.[12]
Various ablative techniques have been used to destroy liver metastases, including freezing, microwaves, lasers and the use of alternating current within the radiofrequency range.

Surgery

- Although palliative surgery for malignant bowel obstruction from carcinomatosis can benefit patients, it comes at the cost of high mortality and morbidity relative to the patient’s remaining survival time.[13]
- Current evidence on the efficacy of cytoreduction surgery (CRS) followed by hyperthermic intraoperative peritoneal chemotherapy (HIPEC) for peritoneal carcinomatosis shows some improvement in survival for selected patients with colorectal metastases, but evidence is limited for other types of cancer.[14]
- The surgical treatment of bone metastases can improve life expectancy and the quality of life.[15]

For patients who are incurable, a frank and honest discussion must take place. This may require more than one session and the skills for breaking bad news are required. Other considerations may be dying at home and dyspnoea in palliative care. Pain control in terminal care and nausea and vomiting in palliative care may also warrant attention.

Palliative care should not be seen as a failure. It is a very demanding and very rewarding aspect of medical practice.[16]

Further reading & references

- Metastatic Cancer; National Cancer Institute (US)
- 4. Specialty Section for the Treatment of Peritoneal Carcinomatosis; Surgicaloncology.com
- 14. Cytoreduction surgery followed by hyperthermic intraoperative peritoneal chemotherapy for peritoneal carcinomatosis; NICE Interventional Procedure Guideline (February 2010)

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