Different modalities for the treatment of GEP tumors

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Therapeutic modalities for GEP tumors

- Surgery
- Drugs
- Targeted radionuclide therapy
- Embolization of hepatic artery
- Radiofrequency ablation
- External radiotherapy
- Conventional chemotherapy
- Miscellaneous

Surgery

Surgery is the only treatment that provides cure

Most GEP are tumors discovered accidentally during emergency abdominal operations:

- Appendiceal carcinoid
- Small bowel carcinoid

Elective Surgery for GEP tumors

Prevention of carcinoid crisis

Gastric Carcinoids

- Type I: hypergastrinemia & chronic atrophic gastritis→limited surgery
- Type II:hypergastrinemia due to Z-E syndrome & MEN I→surgery
- Type II: No hypergastrinemia, sporadic & more malignant→surgery

Small Bowel Carcinoids

Extensive resection of the primary lesion & associated mesenteric lymph nodes

Nodal metastasis lead to small bowel ischemia associated with pain & malbsorption

Colorectal carcinoids

- Small lesions (<1cm) complete endoscopic removal & follow up surveillance
- Larger lesions cancer resection & locoregional lymphadenectomy

Pancreas

- Enucleation
- Distal pancreatectomy
- Central resection
- Total pancreatectomy
- Whipple pancreatoduodenectomy
- Debulking

Primary Liver Carcinoids

Few cases

- Hepatectomy — 74% 5 year survival rate
  18% recurrence rate
- Cholecystectomy indicated

Metastatic GEP Liver lesions

“Curative”hepatic resections	10%
Debulking hepatic resections	palliative

Liver Transplantation

UK Guidelines	“Liver transplantation should not be used in general”
2001	62% one year survival 23% five year survival
2002	80% five year survival
2006	Early outcomes comparable to cirrhosis

A viable therapeutic option

Drug therapy for symptoms related to GEP tumors

- Somatostatin analogues
- Proton pump inhibitors→gastrinoma
- Diazoxid→ insulinomas
- Other drugs→carcinoid syndrome
  - Ondansetron
  - Cyproheptadine
  - Pancreatic enzyme suppls.
  - Cholestrynamin
- Interepheron-alpha

The only proven hormonal management of GEP neuroendocrine tumors is the administration of somatostatin analogues

Targeted Radionuclide Therapy

- Radionuclide therapy only when there is abnormally increased uptake of the corresponding imaging agent
- ^{90}Y-Octreotide
- Clear tumor reduction few patients
- Symptomatic improvement more frequent

MIBG

- High affinity for the noradrenalin transporter protein
- Successful treatment of carcinoid tumors with ^{131}I-MIBG
- Symptomatic responses→60% patients with 8 month duration of response

Embolization of hepatic artery

- Arterial embolization→ischemia of the neoplastic cells, thus reducing hormone secretion.
- **Particle embolization:**

  Gel foam powder
  polyvinyl alcohol

- **Chemoembolization:**

  doxorubicin & cisplatin

- Overall 5-year survival 50-60%
- Mortality 4-6%
- Side effects 10-17%
- Post embolization syndrome

Radiofrequency Ablation (RFA)

- Metastatic lesions up to 4 cm
- As many as 20 such lesions at multiple treatment session over a period of years
- Necessary to ablate at least 90% of visible tumors

External radiotherapy

External radiotherapy is helpful in the management of pain secondary to bone metastases from carcinoid tumors.

Conventional chemotherapy

- Limited role
- cisplatin & etoposide
- Mayo Clinic study combining chemoembolization with chemotherapy→ 70% response rate

Miscellaneous

- Alcohol injections
- Laser therapy
- Cryotherapy

Thank you