PSG Medi Pulse

News ■ Medical ■ Surgical ■ General

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Message

குறள் :

அகன்அமர்ந் தீதலின் நன்றே முகனமர்ந்த
இன்சொலன் ஆகப் பெறின்.

மு. வரதராசன் விளக்கம் :

முகம் மலர்ந்து இன்சொல் உடையவனாக இருக்கப்பெற்றால் மனம் மகிழ்ந்து பொருள் கொடுக்கும் ஈகையைவிட நல்லதாகும்.

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Recurrent Mucinous Ovarian Tumour with Pseudomyxoma Peritonei - CRS and HIPEC case report and review

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Peritoneal carcinomatosis (PTC)have been traditionally regarded as advanced malignant disease and has generally been associated with a grim prognosis. The term Peritoneal Surface Malignancies (PSMs) identifies a wide range of epithelial or mesenchymal neoplasm that originates from the primitive structure of the peritoneum or spread over and through the peritoneum membrane as metastases deriving from tumors of intra-abdominal, retroperitoneal, or extra abdominal organs or viscera. PSM evolution depends on aggressiveness of the tumour: in contrast with benign or low malignant forms, aggressive forms are able to produce fast and fatal disease progression. The primitive forms are much rarer than secondary forms, and mesotheliomas and serous tumors of the peritoneum are the most common among them. Colorectal, gastric, and ovarian peritoneal carcinomatosis (PC) are the most frequent forms of PSM arising from intraperitoneal viscera. PSMs originating from retroperitoneal tumors, such as the pancreas, kidneys, or adrenals, are rare and even less frequent are those originating from extra-abdominal tumors, such as breast or lung cancer. Epithelial forms are far more frequent than mesenchymal forms. Primary tumors of the peritoneum and carcinomatosis from gynecological or gastrointestinal tumors are overall the most widespread and common PSMs treated in surgery and oncology. Irrespective of histological differences, most PSMs have a common tendency to grow for a relatively long period of time exclusively in the abdominal cavity, thus representing an ideal target for aggressive locoregional treatments.

Although PTC is categorized as metastatic disease, it represents a special disease pattern considered to be locoregional disease limited to the abdominal cavity.

Cytoreductive surgery (CRS) and intraoperative hyperthermic intraperitoneal chemotherapy (HIPEC) have been used as locoregional treatment for selected patients with PTC from gastric, colorectal, and ovarian cancers; with mesothelioma; and with pseudomyxoma peritonei (PMP)[1,2].

CONTEXT

Conventional treatment of PSMs includes (palliative) surgery and systemic chemotherapy. However, surgery leaves behind at least some microscopic disease, and systemic chemotherapy is generally not effective because of poor drug penetration[1]. Although usually considered to be a systemic disease, PSMs can be better understood as regional dissemination. Many intra-abdominal malignancies with tumour implants on peritoneal surfaces can remain confined to the peritoneal cavity for a prolonged period of time. As a result, even though PSMs is certainly considered a poor prognostic sign, it is not proof of distant metastasis, thus providing a rationale for regional cancer treatment[2].

Rationale for HIPEC

The main advantage of intraperitoneal (IP) chemotherapy is its ability to achieve a significantly higher concentration of the selected agent in the locoregional area, resulting in improved efficacy[3]. Administration of chemotherapy into the peritoneal cavity not only ensures better exposure of tumour tissue to the drug, but also less systemic toxicity, because only a limited portion of the drug is absorbed from the peritoneal cavity into the systemic vascular circulation[3,4]. Furthermore, the vascular drainage from a large portion of the peritoneum occurs through the portal venous system, allowing for early metabolism and inactivation of the drug in the liver[3].

Prerequisites

To be effective, IP chemotherapy has to fulfil certain prerequisites[3]. Because penetration of the intraperitoneally delivered drug into tumour deposits is limited, extensive CRS—leaving no, or very little, macroscopic disease behind—should always precede IP chemotherapy. Because the administered drug has to reach the entire serosal peritoneal surface, an adequate volume of the carrier solution must be maintained throughout the treatment time, and adhesions must be absent.

The choice of the chemotherapeutic drug to be used during HIPEC is very important. The aspects that must be taken into account are described in detail elsewhere[5,6]. In short, the agent should not cause local toxicity and should not require metabolization into its active form (usually in the liver). It should also be directly cytotoxic, have well-established activity against the malignancy being treated, and demonstrate a pharmacokinetic advantage after IP administration, with high locoregional drug exposure and limited systemic toxicity. A synergistic effect with heat is preferred, because increased temperature can enhance the responsiveness of tumour cells to cytotoxic agents[7]. The drug of choice for intravenous (IV) administration is not necessarily the one that is optimal for IP chemotherapy. More favourable pharmacokinetics and thermic enhancement can make a systemically less-effective drug highly advantageous for IP chemotherapy.

The intraoperative application of HIPEC immediately after CRS aims to treat microscopic and minimal macroscopic peritoneal disease before the formation of early postoperative adhesions. When adhesions form, the IP chemotherapy might not reach the tumour cells in some areas of the peritoneal cavity[8].

The abdominal wall can be open or closed during the HIPEC treatment period. A roller pump is used to perfuse the drug solution throughout the peritoneal cavity, usually for 30–90 minutes, at an intra-abdominal temperature of approximately 40°C to 42°C.

Cytoreductive Surgery

As already mentioned, effective complete or optimal CRS, leaving behind no macroscopic disease or tumour nodule of less than a few millimeters should precede HIPEC. Cytoreductive surgery should not be confused with debulking surgery, which is surgery aimed at reducing gross tumour burden. The ultimate goal of CRS is to remove all macroscopic peritoneal disease. The peritonectomy procedures have been well described by Sugarbaker9 and can be categorized into right subdiaphragmatic and parietal peritonectomy, left subdiaphragmatic and parietal peritonectomy, greater omentectomy and splenectomy, lesser omentectomy and stripping of the omental bursa, and pelvic peritonectomy with salpingo-oophorectomy in women. Additionally, resection of other involved organs such as the uterus, gallbladder, stomach, distal pancreas, colon, and small bowel are performed. The extended and multi-visceral resections should be performed only if an optimal or complete CRS can be achieved[10]. Morbidity from such surgery is discussed later in this review.

Patient Selection

It is of utmost importance to carefully select patients who could benefit from this major procedure and to avoid the attendant morbidity and mortality in patients who are not expected to benefit.

When evaluating a patient for CRS and HIPEC, the surgeon should take into account tumour biology, the extent of disease, and the patient's age and co-morbidities, which could compromise the intraoperative and postoperative courses[11]. The patient should be adequately fit to undergo this major multimodality treatment. Most importantly, preoperative evaluation should assess whether optimal or complete CRS is feasible in the individual patient. Widespread and high-volume peritoneal disease, extensive involvement of small bowel or mesenterium, more than 1 bowel stenosis, large tumour masses in the lesser omentum, extensive disease in the hepatoduodenal ligament, biliary or uretal obstruction because of penetration through the

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peritoneum (and not because of external compression), and para-aortic lymph node metastases are usually considered to be contraindications because they are suggestive of aggressive biologic behavior, lower probability of optimal or complete CRS, and poor outcome. A CRS and HIPEC approach also usually seems to be contraindicated when extra-abdominal metastases and liver metastases are present, because the biology of those tumour locations will not be influenced by locoregional treatment. However, because the prognosis for colorectal cancer patients with limited resectable liver metastases after hepatic surgery and current chemotherapeutic regimens is reasonable, some centers will use liver surgery, CRS, HIPEC, and systemic chemotherapy to treat patients with up to 3 peripherally localized and resectable liver metastases and limited PTC. The morbidity and long-term results in such patients are not different from those of colorectal PTC patients without liver metastases (to be discussed shortly)[12–14]. Infiltration of the liver capsule by peritoneal tumour should be differentiated from parenchymal liver metastases.

Radiologic investigations such as computed tomography (CT), magnetic resonance imaging, and position-emission tomography have been used to assess the foregoing criteria, with the aim of improved preoperative patient selection[15]. Although CT was not, in the past, very accurate in depicting peritoneal tumour deposits[16], modern contrast-enhanced multislice CT is regarded as the fundamental imaging modality, and magnetic resonance imaging, position-emission tomography, laparoscopy, and serum tumour markers can be taken into consideration but are not considered essential[17]. Computed tomography enteroclysis provides information about small-bowel and mesenterium involvement[18].

Most recently, to improve patient selection, various prognostic scoring systems have been introduced to preoperatively evaluate patients for CRS and HIPEC[19–21]. The preoperative parameters used in those scoring systems include histopathology, blood tests (especially serum tumour markers), symptoms, and tumour burden (as evaluated by imaging studies). In colorectal PTC, the COREP score—which consists of one histopathologic variable, hemoglobin, white cell count, and four serum tumour markers and their preoperative changes over time—was able to accurately predict open–close surgery in 87% of subjects, complete CRS in 81%, and survival of less than 12 months in 83%[19]. In a multicentre retrospective study[20], colorectal cancer patients with PTC who had no or just mild symptoms, limited PTC, and favourable histology (Peritoneal Surface Disease Severity Score I) had a median overall survival (OS) of 86 months; those with some combination of severe symptoms, extensive PTC, and worse histology, such as signet-ring cells (Peritoneal Surface Disease Severity Score III or IV) had a median OS of only 28 months. Patients in the intermediate category (Peritoneal Surface Disease Severity Score II) had a median OS of 48 months.

Each patient who is a potential candidate for CRS and HIPEC should be discussed in a multidisciplinary team[11]. When considered a good candidate, the patient must be included in detailed discussions about the various parts of the treatment—in particular, discussions about the probabilities of various organ resections, ostomies, postoperative morbidity, quality of life, and risks of recurrence. Moreover, the individual patient's motivation is important because it will influence the entire postoperative course[11].

Case Report

Presenting a 57yr old lady with complaints of lower abdominal pain since 6-7 years, mild to moderate degree; gradually increasing in severity. Complaints of swelling in the lower abdomen since 3 months. H/O loss of weight 3kgs over 3 months. Patient also gives history of decreased appetite. Patient had past surgical history of Lap. Hysterectomy done on 2012, Open cholecystectomy done on 2017, Laparoscopic surgery done in 2019 for ovarian neoplasm (which was reported as borderline mucinous neoplasm with pseudomyxoma peritonei). On examination Per

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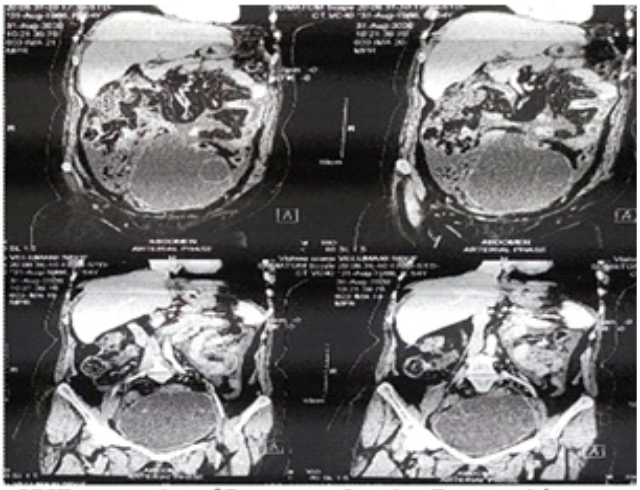
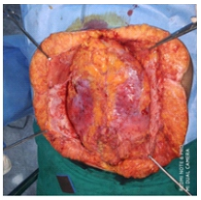
Abdomen was soft with right upper abdomen subcostal scar with Incisional Hernia and Abdomino-pelvic vague mass with mild tenderness noted. PV/PR examination revealed vault fullness. Rest of the systemic examination was normal. CECT scan of abdomen and pelvis revealed a large cystic mass originating in the pelvis with ascites. Image guides biopsy from the mass revealed a Mucinous Ovarian tumour with a focus of invasion.

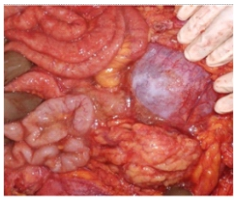


CECT suggestive of Recurrent Ovarian Tumor with ascites

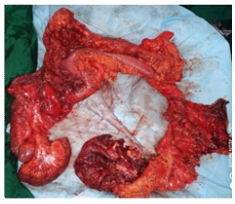
After all relevant investigations and work-up Cardiology and Pulmonology fitness's obtained for surgery. Intraoperative findings were Mucinous Ascites about 5lts, large Left Ovarian tumour in pelvis densely adherent to rectum bladder and appendix, multiple peritoneal nodules involving bilateral sub-diaphragmatic peritoneum, lesser omentum, paracolic gutters, pelvic peritoneum, mass lesions involving terminal ileum caecum and appendix region, whole greater omentum, portions of sigmoid colon. Liver surface had multiple small nodules, no parenchymal lesion. No significant pelvic or para-aortic nodes. Her PCI score was 31/39. She underwent Optimal cytoreduction with Enbloc resection of Ovarian tumour with Total Colectomy and resection of proximal rectum, greater and lesser Omentectomy, Bursectomy, Glissens Capsulectomy, and total parietal peritonectomy. She received Hyper thermic intra-operative chemotherapy with Mytomycin C at a dose of 50mg over 90mins.



Parietal peritonectomy being done

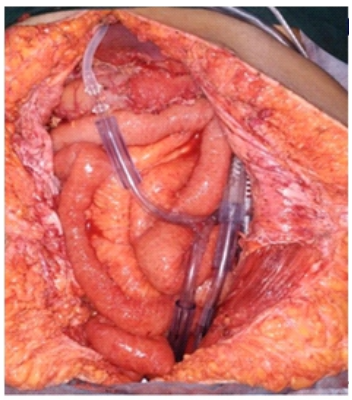


Tumour with gelatinous ascites and omental mass



Operative Specimen

Peri operative care of the patient was challenging and revolved around fluids and electrolytes management, hemoregulation, correction of coagulation disturbances, and hyperthermia management. Goal directed fluid management was done using optimal stratergy with a combination of crystalloids, colloids and albumin. The target end points were sufficient urine output and maintaining the lactate levels to near normal. Point of care TEG(Thromboelastography) was used to guide blood products transfusion. Multiple point temperature monitoring and management of hyperthermia using peripheral and central cooling was critical. Patient recovered well and rest of the treatment was as per standard protocols. Patient was discharged on POD^{13}. Final histopathology report reveled Left ovarian tumour 15x9x2cms Mucinous carcinoma, Grade 2(Moderately differentiated), with involvement of small intestine, appendix, colon, omentum, and parietal peritoneum. Largest extra-pelvic deposit of around 7cm found in the omentum. Ascitic fluid negative for metastasis and lymphnodes free of tumour. On further discussion in the Institutional Tumour Board Meeting it was decided to keep the patient under close surveillance with imaging and tumour markers.



HIPEC Catheters in place

HIPEC perfusion on flow

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WORD QUALITY DAY

World quality day (WQD) is celebrated every year on second Saturday of November and the month of November is regarded as the quality month. 2020 marks the 100th year of WQD Celebration and the global theme of this year for WQD is " creating customer value".

To mark this prestigious event and as a part of centenary celebration , PSG Hospitals celebrated the WQD under the leadership and guidance of Dr JS Bhuvaneswaran, the Managing Director, PSG hospitals, Coimbatore.

As a part of celebration, Dr TS Subbarao, Professor and Head, Department of Pathology at PSG IMS &R along with the alumnus of PSG IMS & R, Dr Satish Ramanathan who is currently the Head of Clinical Biochemistry, Hematology & Deputy Head of Transplantation Immunology & Molecular Diagnostics,MIOT Hospitals, Chennai organised a four day live web-workshop on "SIGMA:THE GOLDEN COMPASS OF MY LABORATORY" with the support of ORTHO CLINICAL DIAGNOSTICS between 23rd and 26th of November 2020.

This workshop was intended for creating awareness of sigma in laboratory practice, to create customer value and to aid in providing a road map for sigma to the path of accreditation.

This Live workshop is the first of its kind to be conducted on a web based platform with eminent speakers including Dr.CN.Srinivas, Director, Department of Laboratory Medicine,MIOT Hopsitals, Chennai, Dr. ChitraShree, Head-Clinical Biochemistry, Hematology and clinical pathology, MADRAS MEDICAL MISSION (MMM),Chennai and Dr Satish Ramanathan himself.

The workshop was designed to include daily assignments relevant to the topics discussed and all delegates were encouraged to actively interact with the speakers and panelists.

The registration was restricted to 30 participants and delegates across disciplines of Lab medicine spanning various parts of the country enrolled and actively participated in the workshop and a digital certificate of participation after successful completion of all assignments was issued to the participants.