

Hyperthermic Intra Peritoneal Chemotherapy (HIPEC)

Sonia P Abraham¹, Malini Rachel C.V², Daisy Sheeba³

¹Professor, ²Nurse Manager, ³Charge Nurse, College of Nursing, Christian Medical College, Vellore.

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ABSTRACT

Abdominal cancer in advanced stages known to be less responsive to any treatment modalities has gained positive results with HIPEC procedure done after a complete cyto-reductive surgery. HIPEC causes selective cell killing of the malignant cell, enhances the drug potency and increases the tissue penetration by the chemo therapeutic agent. It also causes regional dose intensification. Proved to be a successfully emerging option it is the need of the hour for the perioperative nurse to be updated with the latest knowledge, skill, and trends regarding HIPEC.

De initiation: HIPEC is a highly concentrated, heated chemotherapy treatment that is delivered directly into the abdomen during surgery.

Key words: HIPEC, perioperative Nurse, cyto-reductive surgery, chemotherapy.

INTRODUCTION

During an intravenous systemic chemotherapy drug administration, the drug is circulated and absorbed throughout the body causing many side effects when destroying the cancer cells. But during HIPEC procedure (that is performed after cyto-reductive surgery of the visible tumors in the abdomen), the sterile chemotherapy solution at a temperature of 41-42°C is circulated throughout the peritoneal cavity for approximately 30 to 120 minutes, to penetrate and destroy the remaining cancer cells in the abdomen. It was first introduced in the year 1980.^{1,2}

Indications.³

- Colorectal cancer
- Uterine cancer
- Primary peritoneal cancer
- Ovarian cancer with spreads in the abdominal cavity
- Stomach cancer
- Appendiceal cancer
- Pseudomyxoma

- Soft tissue sarcoma
- Wilms tumor
- Desmoplastic small round cell tumor

Advantages:⁴

- Highly suitable when high doses of chemo is required.
- Destroys the deeper micro cancer cells
- Enhances efficiency of chemotherapy
- Minimizes the rest of the body's exposure to the chemotherapy
- Improves chemotherapy absorption and susceptibility of cancer cells
- Fewer side effects even at higher concentration of chemotherapy due to the inability to cross the peritoneal plasma barrier from the peritoneal cavity.
- Reduces the risk for cancer recurrence

Disadvantages:^[5]

Inadequate circulation of the heated drug leads to pooling and accumulation of heat

and chemotherapy in dependent parts of the abdomen leading to increased systemic absorption causing postoperative ileus, bowel perforation and fistula.

Side effects of HIPEC⁵

- Pain
- Nausea, vomiting
- Diarrhea, constipation
- Bloating
- Weight loss
- Insomnia

Procedure- Roles and Responsibilities of Scrub and Circulatory Nurse

1. Patient Preparation

- Explanation of the procedure to the patient and the family members
- Obtaining history of allergy and comorbidity
- Verification of the chemotherapy consent
- Assessment of the physical and mental status

2. HIPEC Drug Regimens

- 1.5% dextrose isotonic peritoneal dialysis solution is the most widely used
- Some groups use regular crystalloids (N/saline or 5% dextrose in water)
- Both the drugs dose and carrier solution volume should be calculated based on BSA, so that toxicity can be predictable.

3. Common chemotherapeutic drugs used⁶

- Inj. Cisplatin
- Inj, Carboplatin
- Inj. 5 FU
- Inj. Taxanes
- Inj. Irinotecan
- Inj. Mitomycin
- Inj. Adreomycin

4. Preparation of Drug⁷

- Chemotherapy solution is prepared in the pharmacy and it is sent to the respective OR in a sealed light-protected bag. With double gloves check the integrity of bag. Any leak detected results in the bag being returned to the pharmacy.

- If the bag is approved, there is no risk of direct exposure and it is given to the person responsible for the perfusion who must check the patients name, drug and dose delivered as per the order.
- Strict aseptic technique to be followed.
- Wash hands before and after drug handling
- Wear powder free, long cuff, and 2 pairs of gloves.
- Wear gown that is non-permeable, long sleeved, cuffed and front closed.
- Wear goggles (with side shields), N95 mask, and fully covered footwear.

5. Safe administration of HIPEC⁷⁻⁹

- At the beginning of the operation the surgical field should be arranged with impervious disposable sheets and drapes, avoid using reusable drapes.
- After cyto-reduction, minimal personnel are permitted inside OR.
- Place absorbent towels with impervious back on the floor and all around the surgical table for possible spills
- Rigid container, leak proof for biological hazardous material and properly labeled with "cyto toxic agents" labels are placed in the OR. They should not be more than half full. Chemotherapy contaminate material should be handled as little as possible and with minimal agitation to prevent spillage in to the environment.
- Universal precaution for handling biological hazardous materials are implemented and monitored continuously
- A smoke evacuator should be working continuously under the plastic sheet during the perfusion.
- Chemotherapy is diluted, and doses of drugs are in micrograms.
- Connect the 10L peritoneal fluid loaded with chemotherapy drug into the peritoneal cavity. Set the temperature of the machine at 40-41°C

- A Roller pump forces chemotherapy perfusion in to the peritoneal cavity for a period of 30- 120 minutes, through the Tenckhoff catheter and pulls it out through the drain, with a fixed flow rate into a separate disposable suction bag.
- Assist in closing the wound and apply the dressing
- Transfer the patient to PACU/ ICU
- Settle the specimen
- Dispose the cytotoxic waste as per the hospital protocol
- Wash instruments thrice with soap and water. Follow it with the regular instrument disinfection and sterilization.
- The surgical suit (all surfaces and floor) to be cleaned with soap and water initially, later the surface with ecoshield and the floor with 7% lysol.
- During chemical spill follow the hospital protocol.

CONCLUSION

Assisting in the HIPEC procedure is a challenge as it involves patient, personal, and environmental safety. It is mandatory for the perioperative nurse to have critical thinking, knowledge, and skill through continuous in-service education, simulation, and workshops. Coordination and proper communication among the multidisciplinary team should be facilitated by the OR Nurse to perform the procedure in the most efficient way.

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