Performance of the Multiprofessional Team in Cytoreductive Surgeries with Intraperitoneal Hyperthermic Chemotherapy: Experience Reporting

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Abstract: Purpose: This study aims at reporting the experience of a cancer hospital’s multiprofessional team with surgery patients in performing cytoreductive surgeries associated with hyperthermic intraperitoneal chemotherapy. Methods: It is a reporting about the experience of the multiprofessional team at AC Camargo Cancer Center’s surgery center, which operates in cytoreductive surgeries with hyperthermic intraperitoneal chemotherapy, thus guaranteeing the surgery patient’s safety. Results: No safety report for the surgery patient subjected to intraperitoneal hypothermic chemotherapy was found in the literature. Therefore, the surgery center’s multiprofessional team’s practice was based on standards for manipulating chemotherapeutic agents and for safely administering medication. A checklist was elaborated for cytoreductive surgeries with hyperthermic intraperitoneal chemotherapy based on the surgery patient safety protocol and the institution’s multiprofessional team’s experience. Conclusions: From the multiprofessional team’s experiences in cytoreductive surgeries with hyperthermic intraperitoneal chemotherapy, the importance of elaborating a checklist to promote the quality of assistance and guarantee patient safety during the entire intraoperative phase became evident.

Key words: Patient safety, chemotherapy for cancer by regional perfusion, checklist.

1. Introduction

The study intends to report the experience of a cancer hospital’s multiprofessional team with surgery patients in performing cytoreductive surgeries associated with intraperitoneal hyperthermic chemotherapy.

Patient safety has become a global preoccupation. With this in mind, actions aimed towards minimizing unnecessary risks in healthcare assistance services were developed, enabling the surgery center to stand out [1-3].

Faced with this situation, the WHO (World Health Organization) elaborated a Patient Safety Manual in 2004. This manual sought to raise awareness of healthcare safety and develop healthcare strategies. Considering the patients who are subjected to surgical procedures, the safe surgery manual was created [3-5].

Among the several important items of the Patient Safety Manual, the checklist stands out. This is a way to remember and guarantee that the basic care processes are seen and applied. This list is divided into three parts, beginning before induction of anesthesia, before surgical incision, and before the patient exits the surgery room. The check of this list must be performed by some member of the surgical team (surgeon, anesthesiologist, nursing) [3].

In recent decades, there were great advances in the treatment of various complex pathologies thanks to improvements in surgical techniques. By the same token, cancer surgeries are also progressing. One
example is cytoreduction with hyperthermic intraoperative chemotherapy. This technique is offered as a therapeutic option to a certain group of eligible patients according to neoplasia type [7]. Both the biosafety of the professionals involved and the patient must be preserved through application of institutional protocols.

**Cytoreductive Surgeries with HIPEC (Hyperthermic Intraperitoneal Chemotherapy)**

Cytoreductive surgery is the removal of peritoneal implants, including peritoneum around the implants' location and, if necessary, non-vital organs and structures. The intention is to make the illness microscopic or minimal. After the tumor has been removed, an infusion catheter is inserted into the abdominal wall. To control temperature, three thermometers are inserted into the abdominal and pelvic cavities [7].

The abdominal wall is closed, and the catheters are connected to an extracorporeal circulation machine whose propelling roller introduces and sections the chemotherapy solution. A built-in heat exchanger maintains the solution between 43 and 44 °C so that the temperature in the peritoneal cavity is kept between 41 and 42 °C, and perfusion is maintained for 90 minutes. The chemotherapeutic agent of choice and its dose are determined by the clinical oncologist. Once the perfusion phase is over, the solution is drained, the cavity is opened and washed with saline, and the confection of anastomosis proceeds [6].

In this way, we must establish a safety protocol for the surgical patient in order to maintain the quality and success of the established treatment.

### 2. Method and Materials

This is a retrospective study reporting the experience of the multiprofessional team at the AC Camargo Cancer Center’s surgery center, which operates in cytoreductive surgeries with hyperthermic intraperitoneal chemotherapy, thus guaranteeing the surgery patient’s safety. The authors declare that there is no conflict of interest.

For the topic’s theoretical basis, national and international journals between 2006 and 2017 were extracted from the Scielo, Pubmed, Lilacs, and Medline databases. The following key words were applied: patient safety, chemotherapy for cancer by regional perfusion; checklist. Complete articles available in English and Portuguese were selected.

This study was developed in a cancer hospital of national scope with 480 hospital beds attending exclusively to cancer patients.

This institution’s SC (Surgery Center) has 14 surgery rooms and performs around 1,000 surgical procedures per month (outpatients, inpatients, urgent and emergency care). Of these 1,000 procedures, approximately 10 surgeries are cytoreductive with hyperthermic intraperitoneal chemotherapy.

From the daily experience of the multiprofessional team in the cytoreductive surgeries with hyperthermic intraperitoneal chemotherapy, an instrument was created with a list of items that should not be checked and annotated during these surgical procedures, in order to guarantee safety and quality in the process.

### 3. Results and Discussions

Seventeen articles on the main topic of surgery patient safety were found. However, no safety report for the surgery patient subjected to hyperthermic intraperitoneal chemotherapy was found in the literature. Therefore, the cancer center’s multiprofessional team’s practice was based on standards for manipulating chemotherapeutic agents and safely administering medication.

Initially, patient safety protocol follows WHO guidelines. Regarding anti-neoplastic therapy, it was established that all staff should wear a long-sleeved impermeable apron and personal protective equipment because of the possibility of aerosol (N95 mask, acrylic goggles and disposable gloves).

The surgery center nurse receives the chemotherapeutic agent from the chemotherapy
pharmacy after double checking the information on
the safe administration of medication. The clinical
oncologist’s prescription and the chemotherapy vial
are utilized for verification. It is also checked between
the surgery center nurse and the perfusionist
responsible for manipulating the extracorporeal
machine.

Application of this chemotherapeutic agent is then
followed by appropriate disposal, which includes
discarding the receptacle of the ECC (extracorporeal
circulation circuit) and all the materials that came into
contact with the antineoplastic drugs in appropriate
chemotherapeutic packaging, previously identified as
a toxic residue.

The institution advocates draining with a built-in
receptacle to prevent the spilling of fluid contaminated
by chemotherapeutic agents, thereby guaranteeing the
safety of the professional involved in handling the
product. Moreover, the operating room must have the
air conditioner set at negative pressure in order to
eliminate the maximum amount possible of
chemotherapeutic particles from the environment.

In addition to the checklist advocated by the WHO,
a checklist was elaborated (Annex A) for
cytoreductive surgeries with hyperthermic
intraperitoneal chemotherapy based on the surgery
patient safety protocol and the institution’s
multiprofessional team’s experience.

The 2009 WHO surgical safety checklist was
projected for routine use in surgery rooms as a
standard operation of the process. Although evidently
simple, evidence suggests that patients benefit from
the checklist when used efficiently. Its implementation
requires training and a change in safety culture in
order to achieve the expected result [1-5].

The checklist recommended by WHO should be
performed in all surgical procedures to ensure patient
safety. Some items checked are: patient identification,
which procedure will be performed, whether there is a
presence of drug allergy, whether there is laterality
and if it is correctly demarcated, if all instruments are
available among several other items.

The WHO orients and indicates changes in the
checklist structure according to each institution’s
reality. In this regard, the checklist for cytoreduction
with hyperthermic intraperitoneal chemotherapy was
adapted to the experience of the multiprofessional
team operating at the institution’s surgery center,
where the study was conducted [5].

In the present study, in addition to the checklist that
is recommended by WHO, in case where there is
cytoreduction with intraoperative chemotherapy, it was
necessary to create a new checklist model that
contemplated other variables. In this new model of
checklist the patient’s positioning was reported, for
which chemotherapy was administered, for how long it
was administered, the maximum temperature that was
measured by the peritoneal cavity and also by the
esophageal thermometer, how much volume was
administered in the cavity, among others.

The checklist contributes to team communication
and increases the team members’ awareness. However,
for it to be successful, careful application is required
to certify that it is applied efficiently [7].

Safe administration of medication is one of the
standards of the COREN-SP (Regional Nursing
Council of the State of São Paulo) (right patient, right
drug, right dose, right routine, right time) [8]. The
chemotherapeutic agents need to be manipulated
carefully, and the professional responsible for their
administration also needs to take the right precautions.
The use of personal protective equipment in
cytoreductive surgery with intraperitoneal
chemotherapy is of utmost importance.

Professionals who manipulate antineoplastic agents
have greater chances of developing tumors, genetic
alterations, and DNA damage. Thus, the use of
personal protective equipment is recommended for
professionals who manipulate antineoplastic agents, in
addition to the risk of contaminating the environment
with chemotherapeutic particles. COREN-SP
statement 027/2012 recommends the use of personal
protective equipment as well as the use of long-sleeved surgical smocks and latex gloves during preparation and administration of chemotherapeutic medication [8].

Contaminated materials, empty chemotherapeutic vials or vials with medication remains, empty saline vials, equipment, gauze and gloves contaminated by chemotherapeutic agents must be disposed into a plastic sack and placed into a trash receptacle identified as toxic material. When the receptacles are 2/3 full, they must be adequately disposed [9].

4. Conclusions

Due to the success of all procedures conducted in hospitals, particularly in this type of surgery, we observed that improvements in surgical techniques along with greater safety in surgical performance, in addition to the improvement of chemotherapeutic schedules, have made it possible to offer cancer patients a potential cure or long-term survival.

Therefore, based on the experiences of the multiprofessional team in cytoreductive surgeries with hyperthermic intraperitoneal chemotherapy, the importance of elaborating a checklist to promote the quality of assistance and guarantee patient safety during the whole intraoperative phase became evident.

References

Annex A: Checklist Focused on Cytoreductive Surgeries with Hyperthermic Intraperitoneal Chemotherapy

| Patient: | Patient's Hospital Registration Number: |
| Patient: | Department: |
| Patient: | Bed: |
| Patient: | Admission Date: |
| Patient: | Surgery Date: |
| Patient: | Date of Birth: |
| Patient: | Height: |
| Patient: | Weight: |
| Patient: | Category: |

### Cytoreductive Surgeries with Intraperitoneal Hyperthermic Chemotherapy

| Doctor Responsible: | Start of Operating Room Preparation: |
| Assistant Doctor: | Entry into Operating Room: |
| Assistant Doctor: | Exit from Operating Room: |
| Surgical Instrument Technician: | |

### Anesthesiologist Control

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Type of Anesthesia:  
- General Inhalational
- General Balanced
- General + Epidural
- General + Spinal

Observations:

### Surgery Center Nurse Control

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Observations:

### Perfusionist Control

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Observations: