

Assessment of Knowledge of Radiography Students about Handling of Patient Having Contrast Reactions

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ABSTRACT

Aim: Aim of the study is to assess the knowledge of radiography students about handling of patient having contrast reaction

Methods: A prospective, questionnaire-based study was carried out in Department of Radiological and Imaging Techniques. A validated questionnaire was circulated among undergraduate, postgraduate and diploma Radiographic students.

Result: The total participants were 169 out of which 152 participants responded to questionnaire (89.94%) include undergraduate, postgraduate and diploma students of radiological and imaging techniques. To assess the knowledge of radiography students about handling of patient having contrast reactions, which they gain during theory classes and from hospital posting. There were 54(35.5%) were female and 98 (64.5%) males.

Conclusion: Study concluded that there should be proper theory classes for the conduction of knowledge about handling of patient having contrast reactions in radiology department. Training session and teaching standards should be taken in account for not only the number of hours required to obtain the knowledge with the equipment required to run the classes in the simulation-based learning environment. This questionnaire based survey demonstrate that up-to-date handling of patient having contrast reactions skill in among radiography students of college of paramedical sciences were not sufficient, this should be improved by the well designed training and theoretical sessions. From this study, we suggest that all members of the

health care community should attend the webinars, guest lectures and training sessions about knowledge of handling of patient having contrast reactions in radiology department.

Keywords: Contrast media, adverse reactions, High osmolar contrast media (HOCM), Low osmolar contrast media (LOCM).

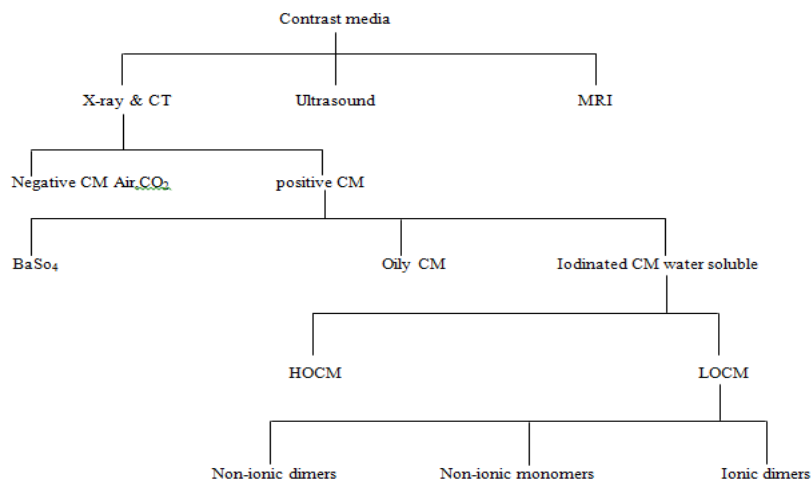
INTRODUCTION

Contrast media is a chemical substance which introduced into human body via enteral / parental route to visualize certain structures not seen in plain radiography. Contrast media are more commonly used drug in diagnostic radiology Present time contrast media agent can be used almost any place into the body. Mostly they are usage intravenously but can be management intra-arterially, intra-theccally and intra-abdominally. Contrast media are usually safe. But sometime contrast media cause – mild, moderate and life threatening reactions. Early contrast reaction may present with a broad sign and symptoms that are affected many organ system. Serious reaction may produce critical emergencies if not control properly and they are effective. It's compulsory, radiologist and medical staff, health worker given contrast agents are knowledge full of this suggestion and ready for investigation and treatment early reaction. In US only have more than fifty million computed tomography examination

done yearly. About 50 percent of computed tomography examination usage intravenous iodinated contrast media [1]

CATEGORIZATION OF CONTRAST MEDIA

Table.no.1



HOCM VS LOCM

Tonicity of single contrast media set through the number of osmolality functioning particle made at the same time as it melt in solution. anionic high osmolar contrast media agents are anionic sea salt, separate in cation and anion in solution. Non- ionic low osmolar contrast media representative not separate into dissociate piece. Hence, low osmolar contrast media around half way of the osmolality of high osmolality of contrast media. Hyper osmolality of contrast media think to exist at the minimum time separately in charge of many individual and unbiased many contrast media reactions, adding pain in extremity and Urticaria, stroke, seizure and hypotension. Total case of adverse reaction of contrast reactions outstandingly less for non-ionic LOCM agent than high osmolar. [2]

PREDISPOSING RISK FACTOR

The powerful risk factor for early adverse contrast reactions are records of serious reactions to both high osmolar and low osmolar contrast media in patens with history of serious unfavorable reaction.

High osmolar contrast media increase adverse reaction of contrast media low osmolar contrast media decrease adverse reaction of contrast media. Asthma raised the risk of adverse reaction, [2,1] patient who are medically inconstant are in-herently at raised chance for harmful reaction by the chemotoxic effects of intravascular contrast media.

Patient with generally allergic reactions or diatheses involving allergic rhinitis, these are raising the risk for early adverse reaction. Malignant tumours increased by occurrence of anaphylactoid reactions, viable by increase histamine release in patient with tumour. [2]

TABLE.2 : Predisposing risk factors for early adverse reactions from contrast media

Previous history of contrast reactions Bronchopneumonia. Loss of water. Hypotension or hypertension. Kidney disease. Circulatory system disease. B- Blocker therapy. Mastocytosis Fatal tumour
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[2]

SELECTION OF CONTRAST MEDIA

Higher water solubility.
 Heat and chemical stability.
 Biological non-antigenic.

Less viscosity.
 An iso-osmolar to plasma.
 Not toxic
 Selective sweating, like sweating by kidney is favorable. Reasonable cost. [9]

CLASSIFICATION OF ADVERSE REACTIONS^[4,6]

Serious	Mild	Moderate
Unconscious Pulmonary edema Hypertension Cardiopulmonary arrest Herat failure	Feeling of nausea Mild Vomiting Raise temperature Mild urtecaria Pain in injected extremity Less sweating	Serious vomiting Fragility Hives Swelling on the face Bronchitis Difficulty in breathing Rigors Pain in abdomen .chest and head Blood clot and stroke

PRIMARY MANAGEMENT OF CONTRAST REACTIONS

When the contrast reactions happen earlier check and assess it. Give smaller dose and receive batter result. Crashcart always available in radiology department for

handling the patients having contrast reactions. It include primary treatment equipment and medications.
 First assessment for early contrast reactions
 To call the emergency team.
 Manage the patient by check the vital sign.
 Firstly check the airway of patient.
 Give the air through the mask on higher quantity 6-10 liter/mint.
 Give the fast drip.
 Special treatment for adverse reactions.
 The basic life support is very important for assessment of adverse reactions. [1]

Table no. 4: COMMON CONCEPT FOR ASSESSMENT CONTRAST REACTIONS^[3]

Concept	Plan
A	Assessment type of reaction, BP and pulse monitoring, ECG monitor for check heart rate. Assess airway Assess intravenous line.
B	Breathing (begin cardiopulmonary resuscitation if need, mouth mask)
C	Categories types of reactions, circulatory assist. Call for emergency team. Cardiac output management
D	Drugs: distribution way and dose, do not wait.

TREATMENT OF PARTICULAR EARLY CONTRAST REACTIONS

Table no.5 shows some guideline for particular reactions^[3]

Reaction	Monitor	Treatment
Skin rashes	Primary shape with marking	Diphenhydramine, 25-50mg orally/ intramuscularly/ intravenously
Br bronchospasm	Oxygen saturation, BP & pulse	Oxygen, 6-10 L/mint, epinephrine 0.1-0.3ml subcutaneously/ intramuscularly
Laryngeal edema	Oxygen saturation, BP & pulse	Secure airway: oxygen 6-10 L/min Epinephrine 0.1-0.3 ml subcutaneously/ Intramuscularly. To call the emergency medical team.
Tachycardia	Oxygen saturation, BP & pulse	Elevate legs 60° oxygen 6- 10 L/mint, fast intravenous fluid, call the medical emergency team
Bradycardia	Oxygen saturation, BP& pulse	Atropine 0.6- 1mg intravenously, call emergency medical team.
Seizures	Oxygen saturation, pulse, BP	Diazepam 5mg intramuscularly / Intravenously, call medical emergency team.

HANDLING OF ADVERSE CONTRAST REACTIONS

Before distribution of contrast media, firstly check the medical history of patient, patient comforting take part in main role to reducing contrast reactions. A sequence wise description of the examination with expected changes are comfort to patient .in case of anxious patients continuous motivate, talk to politely and feedback from

the patients at the of procedure it is possible then it useful. Test dose is very necessary before performing the procedure. [3]

MATERIAL AND METHODS

Study Type: A prospective, questionnaire based study was carried out in Department of Radiological and Imaging Techniques at college of paramedical sciences, Teerthanker Mahaveer University Delhi

Road Moradabad ,Uttar Pradesh India. This study was based on Assessment of Knowledge of Radiography Students About Handling of Patient Having Contrast Reactions .To check the knowledge of undergraduate students , Post graduate and diploma (CT and X-Ray) Radiographic Students about handling of patient having contrast reactions.

STUDY DESIGN: This study was designed to be check the knowledge Radiography undergraduate second year, final year and Post graduate First year and final year and Diploma CT 2nd year and X-ray 2nd year students in the college of paramedical sciences.

STUDY DURATION: This prospective questionnaire based study was conducted out for the time period of one year from April 2020 to May 2021.

SELECTION CRITERIA

- **Inclusion Criteria**

1. BRIT 4th Semester
2. BRIT 6th Semester
3. MRIT 2nd Semester
4. MRIT 4th Semester
5. Diploma Computed Tomography 2nd year
6. Diploma X-ray 2nd year

- **Exclusion Criteria**

1. BRIT 2nd Semester
2. Diploma in X-ray 1st year
3. Diploma in Computed Tomography 1st year
4. Diploma in Magnetic Resonance Imaging 1st and 2nd year

STUDY POPULATION: The study population consisted of Radiography students excluding the students who fell The total participants were 169 out of which 152 participants responded to questionnaire (89.94%) include undergraduate, postgraduate and diploma students of radiological and imaging techniques.

To assess the knowledge of radiography students about handling of patient having

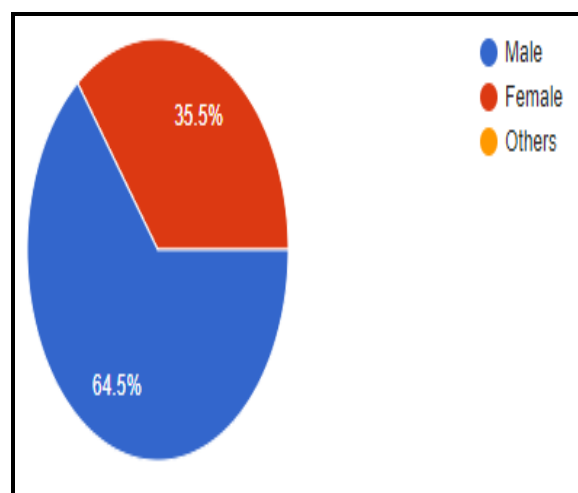
under exclusion criteria. The size of the students was 152 of undergraduate, postgraduate and diploma of Radiological and imaging techniques. A probability sampling method was employed while collecting samples.

METHOD OF DATA COLLECTION

A validated questionnaire was conducted among undergraduate, postgraduate and diploma Radiography students in college of paramedical sciences. The survey included multiple choice questions (MCQs) related to demographic characteristics (Age, Sex), academic qualification and Knowledge about handling of patient having contrast reactions.

STATISTICAL ANALYSIS: The data collected was compiled, tabulated, graphical, analyzed and subjected to statistical tests. Analysis was done using Google form.

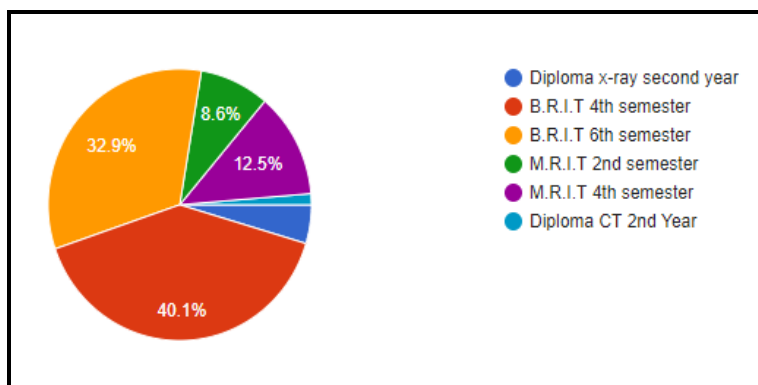
RESULT



Pie chart shows total percentage of male and female students who fill the questionnaire.

contrast reactions, which they gain during theory classes ad from hospital posting. There were 54(35.5%) were female and 98 (64.5%) males. Out of 152 respondent 19(12.5%) were students of MRIT 4th semester, 13(8.6%) were students of MRIT 2nd semester, 50 (32.9%) BRIT 6th

semester, 61 (40.1%) BRIT 4th semester, 2 (1.3%) were students of diploma CT 2nd year, 7 (4.6%) were students of x-ray 2nd year,



Pie chart shows the percentage of total number of respondent according to course

DISCUSSION

Study concluded that there should be proper theory classes for the conduction of knowledge about handling of patient having contrast reactions in radiology department. Training session and teaching standards should be taken in account for now no longer simplest the range of hours required to obtain the knowledge with the equipment required to run the classes in the simulation-based learning environment. This questionnaire based survey demonstrate that up-to-date handling of patient having contrast reactions skill in among radiography students of college of paramedical sciences were not sufficient, this should be improved by the well designed training and theoretical sessions. From this study, we suggest that all members of the health care community should attend the webinars, guest lectures and training sessions about knowledge of handling of patient having contrast reactions in radiology department.

MEAN VALUE TABLE

Total Result	Mean Value
BRIT 4 th sem	53.6%
BRIT 6 th sem	66.6%
MRIT 2 nd sem	78.4%
MRIT 4 th sem	98.7%
DIPLOMA	52.1%

CONCLUSION

In this study to assess the knowledge of students from under graduation, Post-graduation and diploma in radiology imaging technique knowledge about handling of patient having contrast reactions in radiology department is a serious issue which needs to be addressed promptly and carefully. Calculated the mean value of respondents who give the correct answer. The evaluation of the collected data had allowed to formulate at the following conclusion. Knowledge about handling of patient having contrast reactions in BRIT 4th semester students have sufficient knowledge 53.6%, BRIT 6th semester students had average knowledge 66.6%, MRIT 2nd semester students had good knowledge 78.4%, MRIT 4th semester students had very good knowledge 98.7%, and diploma students have insufficient knowledge 52.1%

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Ethical Approval: Approved

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