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GENERAL ANESTHESIA (TIVA) DURING BRACHYTHERAPY FOR CERVICAL CANCER PATIENTS: A RETROSPECTIVE STUDY

Anesthesiology

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ABSTRACT

Brachytherapy for cervical cancers presents the anesthetist with numerous challenges, which differ radically from those during routine surgery. Patients scheduled for brachytherapy are often elderly with comorbid diseases that may preclude major surgery and pose a high risk for perioperative complications. Intracavitary and interstitial brachytherapy procedures are extremely painful and require both profound analgesia and immobilization. Furthermore, these patients have to be shifted through radiology treatment planning and internal radiotherapy while still fully sedated and immobile.

Total intravenous anesthesia (TIVA) is an ideal technique for brachytherapy as it is safe under monitored care and permits quick turnover of patients. TIVA is easy to administer, permits early return of patients to their homes and is considerably less embarrassing to the female patient group when compared to neuraxial techniques.

KEYWORDS

Brachytherapy, cancer cervix, anesthesia, TIVA

Material & Methods:

The Lion's Cancer & Research hospital at Visakhapatnam undertakes 75 to 100 HDR procedures for cervical cancer patients per month. Consequently the department of anesthesiology has standardized a TIVA protocol consisting of a premixed cocktail of drugs for general anesthesia since 1996. 13700 cases have been treated using this technique for the past 15 years without a single mortality, minimal morbidity, low cost and a high degree of acceptability.

Patients are sent to the operation theatre after 6 hour nil by mouth (NPO) with a 20 swg intravenous cannula in place. The intra procedural parameters monitored for all cases are heart rate, hemoglobin saturation, ECG and non invasive blood pressure. Patients are preoxygenated with a polymask while one ampoule each of glycopyrrolate 0.2mg, diazepam 10 mg, pentazocine 30 mg and ketamine 100 mg (total 6 ml) are loaded into a 10 ml syringe. The drugs are compatible and mix without precipitation. 1 ml of this mixture is injected intravenously as a test dose and to exclude extravasation of drug and check patient response, after which the patient is positioned in lithotomy. Once prepping is completed, another 1 ml of the drug mixture is injected intravenously. The radiation oncologist then sounds the uterus, inserts the tandem into the uterine cavity and then a pair of ovoid applicators into the uterine fornices and locks them into place with tight vaginal ribbon gauze pack.

If the patient experiences discomfort or pain, another 0.5 to 1.0 ml of the drug mixture is injected i/v. Only in very exceptional cases, usually patients with BMI >2.5 or very low pain threshold, is 3 ml dose of the mixture exceeded. After ascertaining respiratory and circulatory stability, the patient is then shifted to the radiology department with a clip on pulse oximeter. For planning radiation, x-ray pelvis orthogonal views are taken to verify the positioning of the applicators after which the films are digitized to generate a computer controlled brachytherapy plan.

Computer guided remote after loading and treatment with Ir192 isotope carried out in the high density radiation (HDR) room. Placement of the radioactive capsules does not cause discomfort. The length of time that a patient has to remain in the hospital with the tandem and ovoid applicator in place depends on the clinical situation, source strength and planned dose . Most treatments last between 5 to 30 mins. Patients are kept under observation for 4-6 h and discharged home with an escort.

Exclusion criteria: Diseases or medications affecting the nervous system, chronic use of analgesics, and contraindication for GA like coronary artery disease, uncontrolled systemic hypertension and psychiatric illness.

Observations & Results

Mean age : 45.6 years

ASA status 1 - 1700 ASA 2 - 9465 ASA 3 - 1535

Number of brachytherapy sessions:

1 session - 5378
2 sessions- 7436
3 sessions- 886

Adverse events

Local extravasation of drug: 31 cases

Bradycardia (heart rate <60 beats min) ; 27 cases (3 cases with second degree heart block and 20 cases on long term beta blockers for essential hypertension and 4 cases due to transient oxygen desaturation) Tachycardia (>120 beats min) : 1928 cases (atropine induced 1847 cases and 81 cases being 'light' due to inadequate sedation/analgesia) Hypotension (blood pressure <30% of pretreatment value), Nil Hypertension (blood pressure > 30% of pretreatment value); 1377 cases (1373 cases due to ketamine+ pentazocine and 4 cases due to transient apnea and hypercarbia) Ventilation assist: 2 patients had laryngeal spasm at cervical dilatation and 2 had transient apnea after induction. Respiration was assisted with 6 l/min oxygen flow using face mask, bag and Bain circuit

PONV: 1238 cases
Awareness during procedure, Nil
Delirium, hallucinations : 119 cases
Rigidity.involuntary movements: 230 cases
Patient acceptability: 3551 cases
Prolonged admission: Nil

Discussion

Carcinoma cervix is the leading site for cancer among the female population of India and constitutes 15.2 to 26.9% of all cancers. (1) In our hospital it constitutes 24.6 % of all cancers seen in the outpatient. High dose Radiotherapy (HDR)/ Brachytherapy or internal radiation therapy involves the implantation of radioactive sources. The procedure targets the cervix in order to deliver a maximum dose while minimizing exposure and collateral damage to the surrounding healthy tissue like bladder and rectum. With a few well-placed catheters, HDR brachytherapy provides a very precise and effective treatment for cervical cancers. The procedure takes under 30 minutes and multiple sessions of HDR may be required for a patient depending on nature of lesion and response.(2,3,4)

Spinal anesthesia is unsuited for outpatient procedures as it is time consuming, requires a very high degree of asepsis, necessitates preload with intravenous fluids, and is accompanied by risk of hypotension, persistent post spinal headache, urinary retention and serious infections of the CNS. (5,6,7,8)

Conclusions:

Short general anesthesia using a cocktail of glycopyrrolate, ketamine, pentazocine and diazepam provides/ satisfactory pain relief and immobilization during high dose brachytherapy for patients with cancer cervix.

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