

Anaesthetic Management of Patients for Brachytherapy in Radiation Suite

AAMIR BASHIR¹, MUHAMMAD NAVEED AZHAR², MUHAMMAD AZAM³¹Assistant Professor Anaesthesia, Shalamar Medical & Dental College, Lahore²Consultant Anaesthetist, Shaukat Khanum Memorial Cancer Hospital & Research Centre, Peshawar³Assistant Professor Anaesthesia, Services institute of Medical Sciences, LahoreCorrespondence to Dr. Aamir Bashir, Email: dr.aasi@gmail.com

ABSTRACT

Background: Cervical cancer is one of the leading sites for cancer in female patients and brachytherapy remains one of the treatment modality for it. Anaesthetic services are required in certain cases. Anaesthesia services outside operating room pose challenges for anaesthesiologists due to remote access need for slave monitors etc.

Aim: To evaluate the outcome of different anaesthetic techniques in female patients undergoing cervical brachytherapy procedures in radiotherapy department.

Methods: This retrospective cross-sectional analysis conducted at a tertiary care cancer centre of Shaukat Khanum Memorial Trust Lahore. Anaesthetic details of all female patients planned for brachytherapy over a time period of three years from 2016 to 2018 was recorded. The subjects were female patients for the given procedure. Their mean age in years, ASA status, anaesthetic technique either General anaesthesia or Spinal anaesthesia in terms of patient number and percentage of total patients for either, any complication related to anaesthetics was recorded. Chi square test was applied to see any correlation between anaesthetic technique and complications.

Results: There were 87 female patients in this research having mean age of 51±15 years. Regarding ASA physical status, 27(31%) of ASA status II while 60(69%) patients of ASA status III. General anaesthesia was given to 33(38%) patients, while 54(62%) patients received spinal anaesthesia. Overall, complications rate remained 7% and it was less in spinal anaesthesia (2%) as compared to general anaesthesia (8%) with statistically significant p-value of 0.001

Conclusions: We concluded that cervical brachytherapy can be safely conducted under spinal anaesthesia in radiation suite.

Keywords: Brachytherapy, spinal anaesthesia, general anaesthesia, anaesthesia outside OR.

INTRODUCTION

Cervical cancer is one of the leading sites for cancer in female patients. Different treatment modalities have been used for its cure. Cervical brachytherapy is one of the common modality for treatment of cervical cancer in female patients⁽¹⁾. This process involves series of procedures including specific positioning, followed by placement of a specific device in genital tract. The correct placement is confirmed on CT scan. After this patient is shifted to radiation suite for intense radiation exposure to localised area. Pain and severe discomfort in certain patients remain one of the major reasons requiring anaesthetic services. The applicator and device applied during procedure stimulates autonomic nervous system that causes severe pain and other problems. However, conduction of anaesthetic procedures away for operating room pose significant problems and challenges as it requires remote access and monitoring in difficult situations. Different anaesthetic techniques have been used outside operating rooms⁽²⁾. This includes deep sedation, spinal anaesthesia and general anaesthesia depending upon the need and extent of procedure. Safe anaesthetic technique with minimal possible complications and easy handling is desirable. Therefore, this study was conducted to determine the outcome of different anaesthetic techniques with minimal possible complications during management of female patients undergoing cervical brachytherapy procedure in radiotherapy department.

METHODS

This retrospective cross-sectional analysis was completed at tertiary care cancer centre of Shaukat Khanum Memorial Trust Lahore. Due approval from institutional review board was taken with exemption for informed consent. Data was collected from electronic medical record of the female patients undergoing cervical brachytherapy procedure under anaesthesia. Duration of collected data was for a period of three years from 2016 to 2018. Patients age in years, ASA Physical status, and different anaesthetic techniques either general anaesthesia or spinal anaesthesia, immediate complications related to anaesthetic

Received on 14-04-2022

Accepted on 27-08-2022

technique on day of procedure requiring intervention were documented. Possible complications of general anaesthesia were considered as nausea & vomiting, respiratory difficulty, laryngospasm, bronchospasm and pulmonary aspiration while possible complications of Spinal anaesthesia were considered as hypotension, bradycardia, high spinal anaesthesia, prolonged stay more than 4 hours in recovery due to motor block.

Data were analysed in SPSS version 21. Mean age in years, ASA Physical status, anaesthetic technique either General anaesthesia or Spinal anaesthesia in terms of patient number and percentage of total patients for either, any complication occurred were recorded for either anaesthetic technique. Chi Square test was used to see any correlation between anaesthetic technique and complications.

RESULTS

A total of 87 female patients planned for brachytherapy under anaesthetic services were included in study. Quantitative variables like age was presented as mean±standard deviation. Mean age of 51 years with standard deviation of 15. ASA status and anaesthetic techniques were presented as frequency and percentages. Regarding ASA physical status 27(31%) belonged to ASA physical status II while 69% (n: 60) patients belonged to ASA status III as shown in table 1. Considering anaesthetic technique, 33(38%) patients received general anaesthesia while 54(62%) received spinal anaesthesia (table 1). Overall complications rate remained 7%, however, considering anaesthetic technique, complication rate was less in spinal anaesthesia (2%) as compared to general anaesthesia (8%) as shown in table 2. Using chi square test, cross tabulation was done for anaesthetic technique versus complications and p-value remain 0.001 which was statistically significant. None of the patient required post-procedure admission with reference to anaesthetics.

Table 1: Frequency and percentage regarding ASA status and anaesthetic technique

Parameters		n%	Total
ASA Status	ASA II	27(31%)	87(100%)
	ASA III	60(69%)	
Anaesthetic technique	General Anaesthesia	33(38%)	87(100%)
	Spinal Anaesthesia	54(62%)	

Table 2: Complications cross tabulation: ASA status and anaesthetic technique

Parameters		Complications	Overall complication rate
ASA status	ASA II	2(7%)	7%
	ASA III	4(6%)	
Anaesthetic technique	G/A	5(8%)	
	S/A	1(2%)	

p-value: 0.001 (Statistically significant)

DISCUSSION

Delivery of safe anaesthesia and recovery are key to standardised anaesthetic practices. This retrospective analysis shows two different anaesthetic techniques including general anaesthesia and spinal anaesthesia for brachytherapy in female patients with cervical cancer at radiation suite. It is clear that both the techniques has been used for the said procedure, however, spinal anaesthesia seems to be better option with less number of complications 2% versus 8% in general anaesthesia (p-value 0.001).

Spinal anaesthesia has been frequently used for cervical brachytherapy as shown by a study conducted by Haus NJ and colleagues, who compared two different doses of spinal anesthesia for the said procedure. They found out that is essential to ensure adequate motor block for successful completion of the procedure³. Other forms of regional anesthesia like caudal epidural has also been used for the given procedure as shown by Yoko IS, who found caudal epidural very successful in reducing procedural pain when compared with control groups⁴. Other novel anesthetic techniques like sedation combined with local anesthetic infiltration has also been used as shown in a study conducted by Tan KHS and colleagues who proved it also a safe anesthetic technique⁵. Use of regional anesthesia in procedure outside operating room is being frequently used for various procedures as shown in a study by De Buck and colleagues and it has been used for various modalities including pain management in situations of trauma, fractures and joint dislocations⁶.

Anesthetic services outside operating room irrespective of the procedure being performed pose a challenge and need special medical care and standardized anesthetic monitoring. This includes all the cases either being conducted under sedation, regional anesthesia or general anesthesia. This has been clearly

decided in study written by Ann MY and colleagues, and they have emphasized the need for monitoring very well⁷.

Considering all above discussion, although literature is not absolutely against the use of general anaesthesia for cervical brachytherapy however, with increasing awareness and improved monitoring standards and advanced medications for sedation and regional anaesthesia, the novel techniques can be safely used.

CONCLUSION

Anaesthetic techniques should be tailored according to proposed procedure and medical problems of the patients. Anaesthetic delivery outside operating room require special care as per guidelines of various anaesthetic societies. We concluded that cervical brachytherapy can be safely conducted under spinal anaesthesia for the given procedure in department of radiotherapy in female patients with cervical cancer.

Conflict of interest: None

Financial support: None

REFERENCES

1. Smith MD, Todd JG, Symonds RP. Analgesia for pelvic brachytherapy. *Br J Anaesthesiol* 2002;88:270-6
2. Erickson B, Gillin M, Interstitial implantation of gynaecologic malignancies. *J Surg Oncol* 1997;66:285-95
3. Haus NJ, Kambarami TC, Dyer RA. Spinal anaesthesia for brachytherapy for carcinoma of the cervix: a comparison of two dose regimens of hyperbaric bupivacaine. *South Afr J Anaesth Analg* 2013;19(3):154-159
4. Yoko IS, Nakamura K, Abe M, Kunitake N, Matsumoto K, Ohga S, et al. Caudal epidural anesthesia during intracavitary brachytherapy for cervical cancer. *J Radiat Res.* 2015 May; 56(3): 583–587
5. Tan KHS, Choo BA, Koh VY, Tang JI. Novel anesthetic technique for combined intracavitary and interstitial brachytherapy for cervix cancer in an outpatient setting. *J Contemp Brachytherapy.* 2017 Jun;9(3):236-241.
6. De Buck, F. and Devroe, S. and Missant, C. and Van De Velde, M. Regional anesthesia outside the operating room: Indications and techniques. *Current Opinion in Anaesthesiology.* 2012; 25(4): 501-507
7. Ann Misun Youn, Young-Kwon Ko, and Yoon-Hee Kim. Anesthesia and sedation outside of the operating room. *Korean J Anesthesiol.* 2015 Aug; 68(4): 323–331.