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ORIGINAL RESEARCH

Role of Adjuvants like epidural, TIVA causes reduction in recurrence of cancer diseases

[1]Dr. Majid Ahmed Talikoti, [2]Dr. Jahanara Banday, [3]Dr. Ubaid Ullah Gul Salmani

[1]Professor, Department of Surgery, Rama Medical College & Research Centre, Hapur, Uttar Pradesh, India
[2]Professor, Department of Anaesthesia & Critical Care,Rama Medical College & Research Centre, Hapur, Uttar Pradesh, India
[3]Consultant, Anaesthesia & Critical Care, Noora Hospital, Srinagar, J&K, India

Corresponding Author
Dr. Jahanara Banday
Professor,Department of Anaesthesia & Critical Care,Rama Medical College & Research Centre, Hapur, Uttar Pradesh, India

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Abstract
Background: Cancer treatment that is commonly used is surgical resection. Anesthesia is necessary for surgery to take place, but the anesthetic methods used can have an impact on the cancer's ability to spread and return following the procedure. The present study was conducted to assess role of Anesthesia with multiple comorbidities in oncology patients.
Materials & Methods: The study was carried out on 56 patients who underwent any type of cancer resection surgery of both genders. Parameters such as type of cancer, recurrence etc. was recorded.
Results: Out of 56 patients, males were 36 and females were 20. Type of cancer was bladder cancer in 3, breast cancer in 14, colorectal cancer in 6, esophageal cancer in 3, gastric cancer in 1, hepatocellular carcinoma in 5, ovarian cancer in 3, and prostate cancer in 21 patients. The difference was significant ($P< 0.05$). Type of anesthesia used was epidural anesthesia in 10, general anesthesia in 5, both EA+GA in 34 and spinal anesthesia in 7 patients. The difference was significant ($P< 0.05$). Local recurrence was seen in 2, cancer recurrence in 3 and distant recurrence in 2 cases. The difference was significant ($P< 0.05$).
Conclusion: RA, used alone or adjunctively with GA, is associated with a lower risk of cancer recurrence.
Keywords: Anesthesia, Cancer, Regional

Introduction

Ten million people will die from cancer globally in 2020, making it the main cause of death from diseases. Cancer treatment that is commonly used is surgical resection. Anesthesia is necessary for surgery to take place, but the anesthetic methods used can have an impact on the cancer's ability to spread and return following the procedure.[1] For instance, in patients with breast or prostate cancer, the use of regional anesthesia (RA) in addition to general anesthesia (GA) has been demonstrated to improve postoperative oncological outcomes when compared to GA alone.[2]

In RA, nerve block, local anesthetic infiltration, epidural anesthesia, and spinal anesthesia are all included. By lowering catecholamine levels and minimizing immunosuppression, RA can significantly lessen the neuroendocrine stress response to surgery.[3] This can not only

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effectively control pain but also limit exposure to opioids, which in turn lessens the possibility of those drugs having an adverse effect on the prognosis following surgery.[4] Moreover, analogous results have been demonstrated in animal models. Nonetheless, research on how RA affects cancer metastasis and recurrence has produced both favorable and negative findings.[5] For instance, some research has shown that, in cancer resection surgery, RA, with or without GA, was not substantially associated with a reduced incidence of cancer recurrence and metastasis rate than GA.[6]The present study was conducted to assess role of Anesthesia with multiple comorbidities in oncology patients.

Materials & Methods

The study was carried out on 56 patients who underwent any type of cancer resection surgeryof both genders. All were informed and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Parameters such as type of cancer, recurrence etc. was recorded. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 56		
Gender	**Males**	**Females**
Number	36	20

Table I shows that out of 56 patients, males were 36 and females were 20.

Table II Type of cancer

Cancer	Number	P value
bladder cancer	3	0.01
breast cancer	14	
colorectal cancer	6	
esophageal cancer	3	
gastric cancer	1	
hepatocellular carcinoma	5	
ovarian cancer	3	
prostate cancer	21	

Table II, graph I shows that type of cancer was bladder cancer in 3, breast cancer in 14, colorectal cancer in 6,esophageal cancer in 3, gastric cancer in 1, hepatocellular carcinoma in 5, ovarian cancer in 3, and prostate cancer in 21 patients. The difference was significant (P< 0.05).

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Graph: I Type of cancer

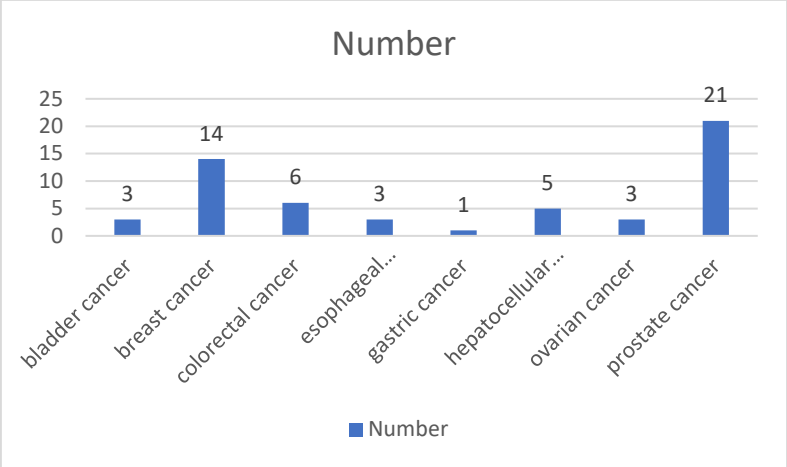

Table III Type of anesthesia used

Type of anesthesia used	Number	P value
EA	10	0.02
GA	5	
EA+GA	34	
SA	7	

Table III shows that type of anesthesia used was epidural anesthesia in 10, general anesthesia in 5, both EA+GA in 34 and spinal anesthesia in 7 patients.The difference was significant (P< 0.05).

Table IV Recurrence rate

Recurrence rate	Number	P value
Local recurrence	2	0.05
Cancer recurrence	3	
Distant metastasis	2	

Table IV shows that local recurrence was seen in 2, cancer recurrence in 3 and distant recurrence in 2 cases. The difference was significant (P< 0.05).

Discussion

In both wealthy and poor global economies, cancer is a major cost on society.[7] The population's aging and growth, along with the rising prevalence of known risk factors like smoking, physical inactivity, being overweight, and shifting reproductive patterns brought on by urbanization and economic development, are all factors that are contributing to the rising incidence of cancer.[8,9] The most frequent cancers that cause significant death rates are lung, breast, prostate, and colorectal malignant tumors.[10] The primary and most effective treatment option for cancer is still surgical removal of malignant tumors; nevertheless, this technique causes a considerable release of tumor cells into the system. The equilibrium between the resistance and metastasis potential of these cells is primarily what determines.[11,12]The present study was conducted to assess role of Anesthesia with multiple comorbidities in oncology patients.

We found that out of 56 patients, males were 36 and females were 20.Type of cancer was bladder cancer in 3, breast cancer in 14, colorectal cancer in 6, oesophageal cancer in 3, gastric cancer in 1, hepatocellular carcinoma in 5, ovarian cancer in 3, and prostate cancer in 21 patients. Li R et al[13] conducted this systematic review and meta-analysis to summarize the effect of inhalational anesthesia (IHNA) vs. propofol-based total intravenous anesthesia

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(TIVA) on metastasis and recurrence after cancer surgery from clinical and pre-clinical studies. The relative risk for metastasis/recurrence in TIVA is 0.61 (95% confidence interval (95% CI) 0.46 to 0.82, $p = 0.0009$) compared to IHNA. Inflammatory cytokines have been implicated in cancer metastasis following cancer surgery, thus theyanalyzed inflammatory cytokines levels after surgery under IHNA or TIVA. Based on pooled analysis, a lower IL-6 level was noticed in TIVA in comparison to IHNA (standardized mean difference (SMD) = 0.77, 95% CI = 0.097 to 1.44, $I^2 = 92\%$, $p = 0.02$) but not TNF-α or IL-10. Preclinical animal model studies show that inhalational anesthetics increase the risk of breast cancer metastasis compared to propofol.

We observed that type of anesthesia used was epidural anesthesia in 10, general anesthesia in 5, both EA+GA in 34 and spinal anesthesia in 7 patients. Local recurrence was seen in 2, cancer recurrence in 3 and distant recurrence in 2 cases.Xie Set al[14]performed an extensive search across PubMed, Embase, and the Cochrane Library databases. The primary outcome was cancer recurrence, while the secondary outcomes were local recurrence and distant metastasis. Pooled odds ratios (ORs) with 95% confidence intervals (CIs) were calculated by utilizing random-effects models. The Newcastle-Ottawa Scale (NOS) was used for quality assessment of observational studies, the Cochrane Risk of Bias Tool for Randomized Trials (Rob 2.0) was used for randomized controlled trials, and all the outcomes were assessed by using the Grading of Recommendations, Assessment, Development and Evaluation (GRADE). This study included 32 studies comprising 24,724 cancer patients. RA, either alone or in combination with GA, was significantly associated with reduced cancer recurrence compared to GA alone (OR=0.82; 95% CI=0.72 to 0.94).

Yap Aet al[15] included 10 studies; six studies examined the effect of anesthetic agent type on recurrence-free survival following breast, esophageal, and non-small cell lung cancer (n = 7,866). The use of TIVA was associated with improved recurrence-free survival in all cancer types (pooled HR, 0.78; 95% CI, 0.65 to 0.94; $P < 0.01$). Eight studies (n = 18,778) explored the effect of anesthetic agent type on overall survival, with TIVA use associated with improved overall survival (pooled HR, 0.76; 95% CI, 0.63 to 0.92; $P < 0.01$).

The shortcoming of the study is small sample size.

Conclusion

Authors found that RA, used alone or adjunctively with GA, is associated with a lower risk of cancer recurrence.

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