Anesthetic Techniques for Urological Surgeries in Benue State University Teaching Hospital (BSUTH), Makurdi, Nigeria

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ABSTRACT

Background: Urological surgery entails operating on the urinary system. Like every other surgery, they require anesthesia for the elimination of surgical pain. The organ to be operated as well as surgical approach determines the choice of anaesthesia used. This may be in the form of regional (including neuroaxial anesthesia) or general or even local anesthesia. This study was conducted to ascertain the anesthetic techniques employed for urological surgeries in the Benue State University Hospital (BSUTH), Makurdi, Nigeria.

Methodology: This was a three-year retrospective study carried out in BSUTH, Makurdi, Nigeria. A total of 125 case files of eligible patients were retrieved from the records department following approval of an application. Relevant information was extracted from the patients' folders and transferred into a prepared proforma. The data collected were analyzed using SPSS version 25 using simple statistics.

Results: The age group with the highest number is that between 61 and 70 years, recording 40 (32.0%). The mean age was 54.0 ± 20.4 . Males were a clear majority with 119 cases accounting for 95.2% while only 6 cases (4.8%) involved females. The male to female ratio was 19.8:1. Most of the patients belonged to ASA II which recorded 70 (56.0%). Of the total of 125 diagnoses made, cancer of the prostate (CaP) was the highest with 63 (50.4%). The most common surgical procedure was prostate biopsy which was undertaken 58 times accounting for 46.4% of the procedures. Caudal block was employed most with 59 (47.2%). This was followed by Local infiltration with 30 (24.0%). Eighty-eight patients had surgery on day case basis while 37 patients underwent surgery as in-patients representing 70.4% and 29.6% of the study group respectively.

Conclusion: Urological procedures are mostly infra-umbilical and are thus quite amenable to either regional or local anesthesia. This study has shown that caudal epidural block is the anesthetic technique of choice in urological surgery in this centre. Local anesthesia and sub-arachnoid block are next in that order. GA is not often employed. LA and regional techniques involve fewer disturbances to the respiratory system, and these were the anaesthetic methods mostly employed as established in this study.

Keywords: Anesthetic techniques, urological surgeries.

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I. INTRODUCTION

Urological surgery entails operating on the urinary system. This includes structures such as the kidneys, ureters, urinary bladder, prostate gland, and the urethra. Like every other surgery, they require anesthesia for the elimination of surgical pain. Urological operations may be on day case basis or in-patient basis. They may be endoscopic or open. Also, these surgeries may be undertaken as emergencies or they may be done as electives. Most of the emergencies present at odd hours [1] when less experienced personnel are on ground and patients are not optimally prepared for the

operations as such, the outcome is poor with resultant increased morbidity and mortality [2]. Elective operations, on the other hand, are scheduled operations where patients are well prepared prior to surgery and as such have better outcome when compared to emergency operations where morbidity and mortality are higher [3].

These surgical approaches largely, determine the choice of anesthesia used. This may be in the form of regional (including neuroaxial anesthesia) or general or even local anesthesia. Neuroaxial anesthesia (NA) refers to the use of local anesthetic agents in the adjoining area of the spinal cord in order to eliminate the perception of painful stimuli

[4]. General anesthesia (GA), on the other hand, refers to the use of drugs that lead to loss of consciousness and, consequently, to the eradication of the perception of painful stimuli [4]. Because many urological procedures are infra umbilical, they put the anesthetist at an advantage because not only is there less disruption to the respiratory function, but it is also possible to carry out most of these surgeries under regional and local anesthesia [5]. Other factors that determine choice of anesthesia include the proficiency of the anesthetist, patient's preference, surgeons request, duration of the procedure and availability of equipment, lifesaving drugs and anesthetic agents [5]-[7]. In a study, Efu et al [8] demonstrated an overwhelming use of regional/local anesthesia techniques for day case urological surgeries.

This study was conducted to ascertain the anesthetic techniques employed for urological surgeries in the Benue State University Hospital (BSUTH), Makurdi, Nigeria.

II. METHODOLOGY

A. Study Design

This was a three-year retrospective study carried out in BSUTH, Makurdi, a 360-bed hospital situated in the capital city of Benue State, North Central Nigeria.

B. Ethical Considerations

The approval of the BSUTH research and ethical committee was sought and obtained.

C. Inclusion Criteria

All urological surgeries carried out in the BSUTH between January 2016 and December 2018 was evaluated.

D. Exclusion Criteria

All non-urological surgery cases as well as urological cases whose records were incomplete were excluded.

E. Procedure

A total of 125 case files of eligible patients were retrieved from the records department of BSUTH after an application to the department was approved. Relevant information was extracted from the patients' folders and transferred into a prepared proforma. The data collected included age, sex, American Society of Anesthesiologists physical status classification (ASA), pre-operative diagnosis, anesthetic technique used, surgical procedure undertaken, whether surgeries were performed as in-patient or day case basis, complications of the anesthetic technique employed and the management of such complication. The data collected were analyzed using SPSS version 25 using simple statistics.

III. RESULTS

A. Age distribution

The age group with the highest number is that between 61 and 70 years, recording 40 (32.0%). This was followed by the age bracket between 51 and 60 years and 71 and 80 years with 23 (18.4%) and 17 (14.4%) respectively. See Fig. 1. The mean age was 54.0 ± 20.4 .

Fig. 1. Histogram showing age of patients (n=125).

B. Sex distribution

Males were a majority with 119 cases accounting for 95.2% while only 6 cases (4.8%) involved females. The male to female ratio was 19.8:1.

C. ASA classification

Most of the patients belonged to ASA II which recorded 70 (56.0%). This was followed by ASA I and ASA III with 24 (19.2%) and 22 (17.6%) respectively. The rest are as presented in Fig. 2.

Fig. 2. Pie chart illustrating ASA classification of patients (%).

D. Diagnoses

Of the total of 125 diagnoses made, cancer of the prostate (CaP) was the highest recording 63 (50.4%). This was followed by benign prostatic hypertrophy (BPH), testicular torsion and urethral stricture recording 14 (11.2%), 10 (8.0%) and 8 (6.4%) respectively. The rest of the diagnoses are as presented on Table 1.

E. Surgical procedures

The most common surgical procedure was prostate biopsy which was undertaken 58 times accounting for 46.4% of the procedures. While orchidectomy and orchidopexy were carried out 10 (8.0%) times each, prostatectomy and urethroplasty took place 9 (7.2%) times each. Other procedures are as presented on Table 2.

TABLE 1: DIAGNOSES

Variable	Frequency (n=125)	Percentage (%)
CaP	63	50.4
BPH	14	11.2
Testicular torsion	10	8.0
Urethral stricture	8	6.4
Urinary retention	4	3.2
Nephrolithiasis	2	1.6
Male infertility	2	1.6
Ureteric obstruction	2	1.6
Bladder stones	2	1.6
Others	18	14.4

TABLE 2: SURGICAL PROCEDURES

Variable	Frequency (n=125)	Percentage (%)
Prostate biopsy	58	46.4
Orchidectomy	10	8.0
Orchidopexy	10	8.0
Prostatectomy	9	7.2
Urethroplasty	9	7.2
Suprapubic cystostomy	7	5.6
Scrotal exploration	3	2.4
Pyelolithotomy	2	1.6
Testicular biopsy	2	1.6
Pyeloplasty	2	1.6
Cystolithotomy	2	1.6
Others	11	8.8

F. Anesthetic techniques

Caudal block was employed most recording 59 (47.2%). This was followed by Local infiltration which recorded 30 (24.0%). While sub-arachnoid block took place 18 (14.4%) times, general anesthesia (GA) with endotracheal tube (ETT) was undertaken 12 (9.6%) times. The rest were GA with face mask and GA laryngeal mask airway (LMA) that were undertaken 5 (4.0%) times and once (0.8%) (Table. 3).

TABLE 3: ANESTHETIC TECHNIQUE

Variable	Frequency (N=125)	Percentage (%)
Caudal block	59	47.2
Local infiltration	30	24.0
SAB	18	14.4
GA with ETT	12	9.6
GA with facemask	5	4.0
GA with LMA	1	0.8

G. Mode of admission

Eighty-eight patients had surgery on day case basis while 37 patients underwent surgery as in-patients representing 70.4% and 29.6% of the study group respectively.

H. Complications of anesthetic technique

There were no complications recorded with the anesthetic techniques employed.

IV. DISCUSSION

From the result, majority of the patients were old people with the highest number recorded in the age group between 60 and 70 years. A summation of ages 50 years and above made up 83% of the study population. This can be explained from the point of view that the two most common indications for surgery, cancer of the prostate and benign prostatic hypertrophy which together made up 66.6% of the diagnoses are diseases that are traditionally seen with advanced age. Ikwuerowo et al. [9] evaluated 1070 patients aged between 7 days and 97 years with children making up 4.5% and adults making up to 95.5%. In the just cited, even

though both pediatric and adult cases were pooled, adults formed a huge majority.

Similarly, the sex distribution is markedly tilted in favour of the male gender because apart from these two diseases, the next most common diseases of torsion tests, urethral stricture and urinary retention are equally diseases seen more with men. A summation of all the diseases highlighted here alone made up 84.2% of the study population. This agrees with O.A. Swande et al [10] that reported 99% male population in their own study. Similarly, Ikwuerowo et al [9] found 93.1% male and 6.9% female in their study.

Most of the patients belonged to ASA I and II physical status classification with both making up 75.2% of the study population. This result is in consonance with findings by Efu et al [8] where patients with American Society of Anesthesiologist physical status classification (ASA) I and II made up 84.6% of the study population. A few ASA III patients were also noted because diseases like metastatic CaP were also being handled.

With regards to the indications for surgery, it was observed that prostate diseases were the most common. Prostate cancer and benign prostatic hypertrophy together accounted for 66.6% as stated earlier. This is an indication that the most common reason patients seek surgery is bladder outlet obstruction. This result is in agreement with similar studies by Efu et al. [8] That more cases of cancer of prostate were seen compared to the benign lesions is as a result of late presentation and as patients get older, they tend to develop cancerous lesions more.

On the surgical procedures undertaken, prostate biopsy, orchidectomy and orchidopexy accounted for 62-4% of the variables. The first two surgical procedures correlate very well with the two most common indications for surgery, i.e. CaP and BPH. This study is in agreement with findings by Efu et al [8] where prostate biopsy, supra-pubic cystostomy and orchidopexy made up 82.7% of the study group. In their own study, O. A. Sowande et al [10] observed that prostate biopsy, orchidectomy and urethral bouginage constitute 79.3% of procedures in their study group. Also, Ikwuerowo et al [9] reported in their study that both prostate biopsy and orchidectomy made up 40.8%. However, in a similar study conducted by Takure et al [11] the commonest procedure recorded was varicocoelectomy.

Majority of the surgeries were conducted on day case basis (70.4%). Anesthetic techniques employed were such that patients would recover sufficiently early enough to return home. Accordingly, caudal block was the used most, followed by local infiltration, both of which make up 71.2% of the procedures. These two techniques are frequently used for day cases. SAB came next after these two. A summation of caudal block, local infiltration and sub-arachnoid block together made up 85.6% of the techniques. This result tallies with the study conducted by Efu et al [8] which demonstrated that majority of the procedures were conducted either under regional or local anesthesia with caudal block accounting for 67.3% of the anesthetic procedures while local infiltration was used for 30.8% of the cases. In the study by O.A. Sowande et al [10], local anesthetic technique was employed in 81% of the cases. In

another study conducted by Takure et al [11], 98.8% of adults tolerated local anesthesia in form of 0.5% to 1% lidocaine with or without adrenaline. Ramyil et al [12] and Amanor-Boadu et al [13] also agree that local anesthetic agent (1% lidocaine injection) is preferred practically in all cases for day case procedure in adults. This is owing to its comparative safety and negligible post-operative problems like nausea, vomiting and headaches, thereby facilitating quicker discharge from hospital.

V. CONCLUSION

Urological procedures are mostly infra-umbilical and are thus quite amenable to either regional or local anesthesia. This study has shown that caudal epidural block is the anesthetic technique of choice in urological surgery in this centre. Local anesthesia and sub-arachnoid block are next in that order. GA is not often employed. LA and regional techniques involve fewer disturbances to the respiratory system and these were the anaesthetic methods mostly employed as established in this study.

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