ISSN 2520-9906

Volume 05, February 2019

The Kenya Journal of Anaesthesiology & Critical Care Medicine

A scientific publication of the Kenya Society of Anaesthesiologists

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- Title
- Abstract
- Introduction
- Methods
- Results
- Discussions
- Conclusion
- References

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Editorial

Welcome to the fifth edition of the KJACCM.

The role of surgery in alleviating human suffering from disease has grown in leaps and bounds from the pioneering era of Sushruta through to modern surgical techniques that are faster, safer and more precise than ever before. Sadly, despite this surgical progress, postsurgical pain as a physiological response to tissue trauma has remained an ever present and potential threat to the quality of life.

The understanding of pain pathways together with identification of contributors to severe acute or chronic pain remain the hallmarks of interventions geared to facilitating early return of the postsurgical patient to a productive meaningful life. Meticulous surgical technique as well as adequate analgesia do have a major role in improving the patient's perioperative experience. Indeed, the anaesthesia triad now addresses relief of pain not just as intraoperative analgesia but subsequent analgesia to minimize disruption of the quality of life.

In this issue, we feature a study on the incidence of post mastectomy pain syndrome in the local Kenyan setting and highlight interventions utilizing perioperative regional techniques that, together with more precise surgery, minimize the incidence of chronic pain following mastectomy. In addition, we report on a prospective study that assesses the impact of postoperative Transversus Abdominis Plexus blocks on analgesic requirements in patients following open major gynecological operations.

With major improvements in healthcare, patients with cardiovascular and respiratory systemic illnesses are now living far longer than was possible a few decades ago. This often comes with the challenge of older sicker frail patients presenting for emergency surgery. Optimisation of the frail elderly patient may require periods that can result in their demise or irreversible deterioration whilst the need for surgical intervention is more immediate. The use of regional anaesthesia that may be coupled with sedation may prove to be the safest and best bet to address the urgent surgical needs without further compromising the patient's physiological status. We feature a case report of an elderly frail patient who underwent successful evacuation of a subdural hematoma under a local anaesthetic block.

Every invasive procedure involving instrumentation of the human body carries with it an inherent risk of complications that can only be minimized by the use of technology through imaging. Awareness of possible complications, recognizing the complication and addressing it before limb or life endangering outcomes occur is a result of continued vigilance within the clinical space and constant interrogation of the evolution and progress of patient care. The last article in the KJACCM is on recognition of inadvertent cannulation of the Azygos vein at placement of central venous catheters and remedial action.

Prevalence Of Post Mastectomy Pain Syndrome At Kenyatta National Hospital

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Abstract

Background

Post mastectomy pain syndrome (PMPS) is a common complication after mastectomy, with a prevalence between 25 to 60%[17; 18]. This is pain persisting 2 to 3 months after mastectomy or other type of breast surgery. Post mastectomy pain is often neuropathic, causing numbness, burning pain or dull ache. Post mastectomy pain remains a difficult to treat condition once it sets in, with significant consequences for the individual patient's quality of life and cost of healthcare to society.

Objective

The objectives of this study were to determine the prevalence of PMPS in patients undergoing mastectomy at the Kenyatta national hospital (KNH), as well as to determine any predictive factors for the development of PMPS.

Materials and Methods

This was a prospective observational cohort study involving 65 patients who underwent mastectomy at KNH. They were followed up for 3 months post-surgery using a telephone-based interview.

A modified data collecting tool comprising the Visual analogue scale (VAS), Douleur neuropathique four (DN4) and the Brief pain Inventory (BPI) was used to collect data via telephone at 1- and 3-months post-surgery. Mild pain was a visual analogue scale of 1 to 2, moderate pain 3 to 5 and a score greater or equal to 6/10 severe pain. Scores above 4/10 in the DN4 was indicative of neuropathic component to the chronic pain.

Results and discussion: Majority (50%) of respondents were between 61 and 80 years old. Ninety percent underwent modified radical mastectomy. Intra-operative techniques included an opioid and paracetamol with or without an NSAID. Few patients received in addition a local anesthetic infiltration. On first post-operative day 50% reported moderate pain at rest that increased to severe with active movement of ipsilateral upper limb. The prevalence of post mastectomy pain syndrome at 3 months was 48%. Neuropathic pain at 1 month was greater at 61%.

Conclusion

Even with less invasive surgeries, PMPS is a clinically significant problem. There is a significant association between control of acute postoperative pain and development of neuropathic pain after mastectomy.

Key words: Post mastectomy pain syndrome, prospective observational study, telephone-based interview, and regression and correlation analysis.

Introduction

Persistent post-surgical pain (PPP) is defined by the International Association for the Study of pain (IASP) as pain that develops after surgical intervention and lasts at least 2-3 months after healing has occurred, and other causes for the pain have been excluded.

Chronic pain is a common complication of surgery[1] and overall, the incidence of chronic pain after major surgery has been estimated to lie between 20% and 50%.[2] This incidence has been found to be higher after limb amputation (30-85%), mastectomy (11-57%), coronary bypass (30-50%) and inguinal hernia (5-63%) surgeries.[2]

Persistent post-surgical pain after mastectomy, also known as post mastectomy pain syndrome (PMPS) is a type of chronic postoperative pain and persists 2-3 months after mastectomy or when other type of breast surgery is performed. Incidence and prevalence of PMPS has been found to be between 25 to 60%.[17; 18]

Post mastectomy pain syndrome is often neuropathic, but occasionally might occur due to hematoma or neuroma formation. It causes numbness, burning pain or dull ache. The pain is present in the chest area (site of surgery) as well as the axilla and ipsilateral arm. It is often worse on abduction of the arm and application of pressure to site of surgery.

Post mastectomy pain syndrome is a difficult to treat condition once it sets in, with significant consequences to patients' quality of life and cost of healthcare.

Development of PMPS has been associated with more aggressive surgery (Radical mastectomy vs. breast conservative treatment, axillary node dissection vs. sentinel lymph node biopsy), younger age and higher body mass index. Adequate pain control perioperatively utilizing various adjuvant analgesics and regional and local anaesthetic infiltration has also been shown to reduce incidence of PMPS in various studies.

Breast cancer is one of the leading cancers in Kenya, occurring in 34/100,000 women.[4] With earlier diagnosis and treatment survival rates have begun to improve, hence increasing the number of women for whom post treatment quality of life is important.

The main objective of this study was to determine the prevalence, severity and predictive factors of developing Post mastectomy pain syndrome (PMPS) at Kenyatta National Hospital (KNH).

Methods

This was a prospective observational cohort study carried out between January 2016 and November 2016. It entailed following up patients undergoing mastectomy up to three months post mastectomy via a telephone-based interview to assess prevalence and severity of post mastectomy pain syndrome.

This study was carried out at the Kenyatta National Hospital, a level 6 referral hospital with a catchment population from Kenya and other east and central African countries.

Ethical approval was sort from Kenyatta National Hospital-University of Nairobi Ethics and research committee before commencement of the study.

Study participants were ASA class I and II patients. They were recruited by consecutive sampling from the surgical wards, followed up in theatre and evaluated on the first post-operative day in the wards. A telephone-based interview was conducted at 1 and 3 months after the mastectomy. Patients excluded from the study were those who declined to participate in the study, who had no access to telephone facility or had absolute language barrier and those with metastatically advanced breast cancer or in ASA class III- VI. Sample size of 65 was determined by using the Fischer's formula with finite population correction:

$$n = \frac{NZ^2p(1-p)}{d^2(N-1) + Z^2p(1-p)}$$

n = 59 + 10% attrition

Where:
n = sample size.
Z = standard normal variant corresponding to the 95% confidence interval, and which is 1.96.
d = the required precision of the estimate (0.05).
p = the expected prevalence for post mastectomy pain syndrome, 0.3 [17-18]
N = Finite population size, 88[38], as per statistics on mastectomy from KNH registry.

Pre-operative pain evaluation was done the night before surgery. This included their ASA class, age and gender, body mass index, marital and employment status and daily income if any. Conduct of anesthesia, modes of analgesia and type of surgical procedure performed was recorded during the mastectomy. On first post-operative day assessment of intensity of acute post-operative pain (at rest and dynamic) using Visual analogue score (VAS) and type of post-operative analgesia used was recorded.

A telephone-based questionnaire administered at 1 and 3 months post-operatively incorporating the VAS to assess pain intensity, DN4 to assess neuropathic component of the pain and the Brief pain Inventory for impairment of functionality was carried out by the principal investigator who was blinded from the earlier findings by the research assistants. Mild pain was categorized as a visual analogue scale of 1 to 2, moderate pain 3 to 5 and a score greater or equal to 6/10 severe pain. Scores above 4/10 in the DN4 was indicative of neuropathic component to the chronic pain. Type of analgesia and adjuvant treatment (chemotherapy or radiotherapy) was also recorded.

Collected data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL, USA). Descriptive statistics was used to determine the prevalence of PMPS. Regression analysis was undertaken to determine the influence of various independent variables on development of neuropathic pain. A paired sample t-test was run to determine association between intensity of acute post-surgical pain after mastectomy and development of persistent post mastectomy pain.

Results

Sixty five (65) patients scheduled for mastectomy during the study period were recruited. Two patients did not have their mastectomy done for surgical reasons. One patient died 2 weeks after discharge from hospital. Sixty two (62) patients, (95%) were followed up to three months after mastectomy and data collected was analyzed for prevalence of post mastectomy pain syndrome.

AGE	1-20	21-40	41-60	61-80
No.	1	14	16	31
%	1.6	22.6	25.8	50
Modal Class	16-80			

Table 1: Demographic data

Majority of the patients were between 61 and 81 years (50%). 48% of the respondents were married while 52% were single (not married or widowed (74%). Most of the patients had a daily expenditure of more than two U.S dollars (51%).

*USD - US dollars

	Expenditure in USD per day		
	<1	≤2 &>1	>2
No.	10	20	32
%	16.1	32.3	51.6

Table 2: Daily expenditure

Majority of the patients underwent modified radical mastectomy (90.3%).

Surgery	RM	MRM	L
Frequency	3	56	2
Percentage	4.8	90.3	3.2

Table 3: Type of Surgery

RM - Radical Mastectomy, MRM – Modified Radical Mastectomy, L-Lumpectomy,

Analgesic techniques employed during mastectomy included a combination of an opioid with paracetamol plus or minus an NSAID in 43 cases (70%), while local wound infiltration was done in only 13 (20%) of the mastectomies.

Intensity of pain in the immediate postoperative period is as shown in the bar graph below.

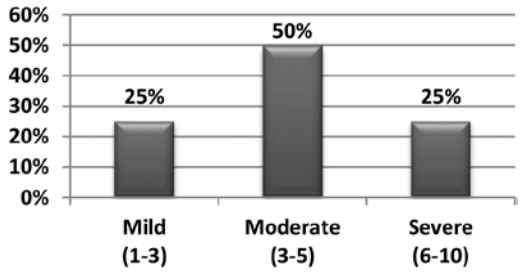

Fig 1: intensity of pain in the immediate postoperative period

On first postoperative day, 25% had mild pain both at rest and on active movement of the ipsilateral upper limb. 50% reported moderate passive pain that increased to severe on movement of the ipsilateral upper limb. 25% had severe pain at rest and needed rescue analgesia.

Postoperative analgesic regime consisted of an opioid (tramadol or pethidine) for two days with either an NSAID or paracetamol of which patients were discharged on.

At 1 month postoperatively, majority of the patients reported moderate pain (58%), severe (26%) and mild (16%). None of the patients were on rescue analgesia. Twenty percent of the patients were undergoing physiotherapy while 5% were using meditation for pain relief.

Neuropathic pain elicited using DN4 showed prevalence of 61% (DN4 score of ≥4) at 1 month postoperatively.

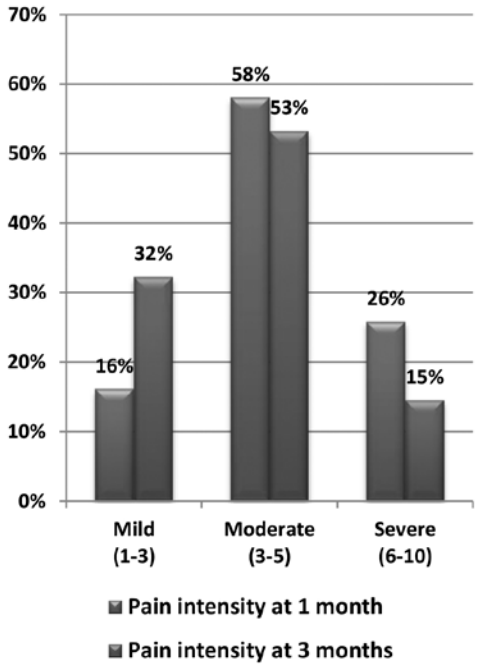

Fig 2: Pain intensity during the follow up period

At 3 months the reported pain intensities were moderate (53%), mild (32%) and severe (17%).

Prevalence of neuropathic pain at 3 months (Post mastectomy pain syndrome) was 48%.

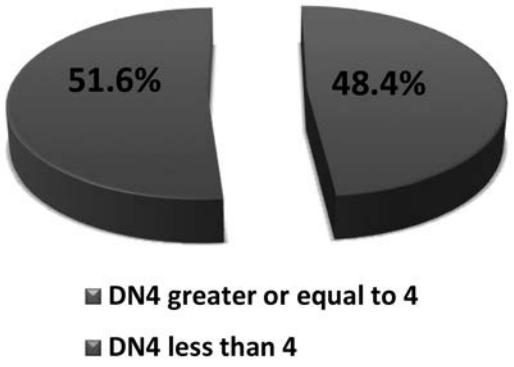

Fig 4: DN4 scores at 3 months postoperatively.

Variable		B	SE	Wald's Statistic	Degrees of Freedom	Significance	EXP(B)
Surgery Type 1		20.138	27741.192	0.000	1	0.999	557155677.4
Surgery Type 2		20.266	27741.192	0.000	1	0.999	632855093.5
Body Mass Index(BMI)		0.298	0.277	1.156	1	0.282	1.347
Marital Status	**Single**	-0.610	0.854	0.514	1	0.474	0.543
	Married	-0.839	0.740	1.288	1	0.256	0.432
Unemployment		-0.635	0.751	0.714	1	0.398	0.530
Age		0.341	0.462	0.545	1	0.460	1.407
Constant		-20.893	27741.192	0.000	1	0.999	0.000

Table 4: Correlation of predictive variables for PMPS

*Surgery Type 1 - Radical Mastectomy
Surgery Type 2 - Modified Radical Mastectomy

Paired VAS Scores	Mean	Standard Deviation	SEM	95% CI of the Difference		DF	t	Sig. (2 tailed)
				Lower	Upper			
1. VASp Vs VAS1	-1.033	0.85	0.155	-1.351	-0.716	29	-6.656	0.000
2. VASa Vs VAS1	-0.533	1.106	0.202	-0.946	0.120	29	-2.641	0.013

Table 5: Association between acute post-operative pain and PMPS at 3 months.

VASp - Passive acute post-surgical pain, VASa - Acute post-surgical pain when actively moving the arm, VAS1 - Persistent post-surgical pain at one month, SEM - Standard error in the mean, DF - Degrees of Freedom, CI- Confidence Interval

Using regression analysis, the odds of developing neuropathic pain or PMPS was strongly associated with the type of surgery, MRM vs. radical mastectomy (Tables 2). This though was not statistically significant (p value 0.999). Employed and married patients also had higher likelihood of getting PMPS, although this was not statistically significant.

Other associations found were young Age and high BMI.

Results of the paired t-test carried out to find any association between acute pain post mastectomy and development of neuropathic pain showed the difference in means of pain intensity acutely post operatively (both passive and dynamic) and neuropathic pain at 1 and 3 months was statistically significant (p value 0.013). This was most likely due to poor pain control.

Discussion

In our study, prevalence of neuropathic pain at one month was 61% and for post mastectomy pain syndrome (3 months) it was 48%. This was in keeping with similar findings elsewhere where incidence and prevalence has been found to be between 25 to 60%.[17; 18] This wide variation has been attributed to various reasons.

Difference in duration of pain assessment from time of surgery has been shown to cause variability of results. As can be seen in our study, the level of neuropathic pain at one and three months was different between the same sample of patients. To improve comparability, Jung et al suggested a consistent time frame definition of post mastectomy pain syndrome to be neuropathic pain occurring 3 months after mastectomy. In our study we followed up patients up to 3 months using a telephone-based questionnaire and this improved validity for our results.

Differences in type of pain assessment tools used also causes the wide range of results from various studies. In our study questionnaire we in cooperated the Douleur neuropathique 4 questionnaire (DN4), which has a high sensitivity (83%) and specificity (90%) [28].

Research methodology utilized also contributes to difference in results. Our study was a prospective study which enabled us to eliminate recall bias which would occur in retrospective studies. In randomized studies results are even more reliable since various arms are standardized except the independent variables being analyzed.

Differences in clinical and socioeconomic characters of various populations being studied also causes variability of results. In our study we tried to standardize the clinical status of our patients by picking ASA I and II patients without advanced metastatic disease. We also assessed for the daily expenditure of our patients to gauge their socioeconomic status, majority (51%) earning greater than 2USD. We also found out that patients with higher earnings were more likely to experience post mastectomy pain syndrome.

Various variables were analyzed to try and ascertain predictors for development of post mastectomy pain syndrome. Neuropathic pain at one month and PMPS at three months was strongly associated with type of surgery; Radical mastectomy vs. MRM using regression analysis OR 1 (95% CI). This means that patients who underwent more invasive surgery of radical mastectomy compared to modified radical mastectomy were

more likely to develop post mastectomy pain syndrome. But this was not statistically significant (p value 0.999), possibly due to the small sample size. Similar findings have been reported in other studies.

In a descriptive cross-sectional study of 137 patients in 2010 in Egypt by Emad Hokkamet al, found a PMPS prevalence of 52% with a significant decrease in prevalence in patients who had undergone less invasive surgery (Breast conservative therapy with Sentinel lymph node biopsy as opposed to Modified radical mastectomy with axillary dissection).[37] In our study all our patients had axillary dissection.

Other associations found were young Age and high BMI, also not statistically significant (p values 0.460 and 0.282 respectively) also possibly due to small sample size. Other studies with larger sample sizes have demonstrated clearly this association.

A prospective observational cohort study in the Unites States by Oliviera et al which followed 300 patients up to six months after surgery found younger age) and axillary lymph node dissection as independent variables associated with development of chronic pain.[35]

Results of the paired t-test carried out to find any association between acute pain post mastectomy and development of neuropathic pain showed the difference in means of pain intensity acutely post operatively (both passive and dynamic) and neuropathic pain at 1 and 3 months was statistically significant (all with p values < 0.05).

This was most likely due to poor pain control. Analgesics used during mastectomy mainly included an opioid regimen with paracetamol and an NSAID. Very few cases had local anaesthetic infiltration done. None of the cases had adjuvant medication (ketamine or clonidine) or regional techniques (pectoralis I and II, paravertebral blocks or epidural blocks) utilized.

On first post-operative day majority of the patients has moderate to severe pain. None of the patient were started on or discharged with adjuvant pain medication.

Various studies have shown the benefits of multimodal analgesic plan inclusive of regional technique and adjuvant pain medication in controlling acute postoperative pain and subsequently reducing the magnitude of post mastectomy pain syndrome.

A randomized clinical trial by Fassouki et al randomized fifty women scheduled for breast cancer surgery into either of two groups; one receiving gabapentin two days preoperatively up to one week postoperatively, topical EMLA cream and local brachial plexus infiltration with ropivacaine and another receiving three placebos instead. The study demonstrated that multimodal analgesia reduces acute and chronic pain after breast surgery for cancer.[30]

Nasr D also carried out a randomized clinical trial on fifty women scheduled for radical mastectomy and axillary dissection to assess the efficacy of perioperative duloxetine on acute and chronic post mastectomy pain. Results showed that duloxetine significantly reduced postoperative analgesic requirements, pain intensity and incidence of chronic pain at 3 and 6 months in women undergoing breast surgery.[33]

Conclusions

Even with less invasive surgeries (90% modified radical mastectomy vs. 4.8% radical mastectomy in our study), post mastectomy pain syndrome remains a clinically significant problem, with prevalence comparable to other studies performed elsewhere.

There is a significant association between control of acute postoperative pain and development of neuropathic pain after mastectomy. We also noted that perioperative analgesic management of breast surgery was devoid of a multimodal technique inclusive of either adjuvant medication or a regional anaesthetic technique. This might have contributed to the poor postoperative pain control and subsequent high magnitude of post mastectomy pain syndrome.

Recomendations

We recommend optimization of the perioperative pain control to reduce impact of post mastectomy pain syndrome, especially with incorporation of local anaesthetic wound infiltration, regional anaesthetic techniques and perioperative adjuvant analgesia use.

We also recommend a larger multicenter, controlled study to better understand the magnitude of post mastectomy pain syndrome and its predictive factors.

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Effectiveness Of Ultrasound Guided Transversus Abdominis Plane Block In Pelvic Gynecological Surgery

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Abstract

Background

Goals of postoperative pain management are to relieve suffering, achieve early mobilization, prevent postoperative complications, reduce length of hospital stay, achieve patient satisfaction and prevent chronic pain syndromes. Inadequate post-op pain management especially during the first 24hrs has been associated with development of chronic pain syndromes.

Objective

To assess post-operative pain relief of TAP block in the first 24 hours after pelvic gynaecological surgeries.

Methodology

An observational study involving 43 adult women undergoing elective pelvic gynaecological surgery at the Kenyatta National Hospital, Nairobi, Kenya. It assessed the pain scores of the respondents immediately after the surgery and a follow up at 6, 12, 18, 24 hours post operatively, time to ambulation and need for rescue analgesia.

Results

The overall average pain score was 2(mild pain) and the average time to request analgesia was 9 hours post operatively. 12 patients did not request for rescue analgesia therefore reducing their opioid requirements. 33 patients requested for rescue analgesia. The average time to complete ambulation was 18 hours.

Conclusion

Single shot bilateral ultrasound guided TAP block for pelvic gynaecological surgery given together with conventional analgesics is effective in reducing pain scores for 8 to 12hrs post operatively, reduced opioid requirements, reduced rest and movement pain encouraging early ambulation with minimal side effects.

Introduction

Pain is defined by the International Association for the Study of Pain as an unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such **[1].**

Pelvic gynaecological surgeries are often associated with severe pain requiring a well-planned analgesia regimen to ensure adequate patient-comfort, satisfaction, early mobilization, decreased length of hospital stay and prevent chronic pain syndromes. As a significant proportion of surgical pain originates from surgical wound, use of local anaesthetic wound infiltration or nerve blocks around the incision site would help in managing post-operative pain. Regional anaesthesia reduces the risk of chronic pain post-surgery compared to conventional pain control **[6]**

Gynaecological pelvic surgeries are also associated with high risk of development of deep venous thrombosis **[5].**

The transverse abdominis plane (TAP) block designed to anaesthetize the nerves supplying the anterior abdominal wall (T6 to L1). It was first described in 2001 by Rafi as a traditional blind landmark technique using the lumbar triangle of Petit **[7].**

Local anaesthetic is then injected between the internal oblique and transversus abdominis muscles just deep the fascial plane between (the plane through which the sensory nerves pass.

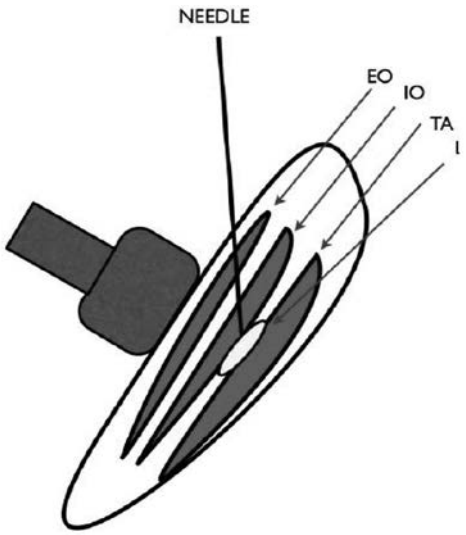

Figure 1: Schematic view of an ultrasound guided transversus abdominis block

EO – External oblique, IO – Internal oblique, TA – Transversus abdominis, LA – Local Anaesthetic

Methods

This was an observational study design conducted at Kenyatta National Hospital main operating theatres. A consecutive non-randomized sample of 45 adult women undergoing elective pelvic gynaecological surgery from December 2017 to February 2018 we recruited. Sampled patients were educated on post-operative pain and its management, interpretation and filling of the pain assessment tools, TAP block procedure, its benefits and risks. Patient received general anaesthesia as per the provider's preference. The data collected included pain scores of the respondents immediately after the surgery and at 6, 12, 18, 24 hours post operatively, time to ambulation and need for rescue analgesia. The data was entered and analysed using Statistical Package for Social Sciences (SPSS vs 23). Descriptive statistics such as mean, median and measures of dispersion, frequencies and percentages were used to describe the pain scores, analgesia requirements and time to ambulation.

Study Results

45 Patients received bilateral TAP blocks with 20mls 0.25% bupivacaine after pelvic gynaecological surgeries and followed up at 0, 6, 12, 18, 24 hours post operatively.

The mean age of the patients was 41.2 with a range between 26 and 69 years and a larger proportion 21(46.7%) aged 36 to 45 years. The age was distributed as indicated in Figure 2 below.

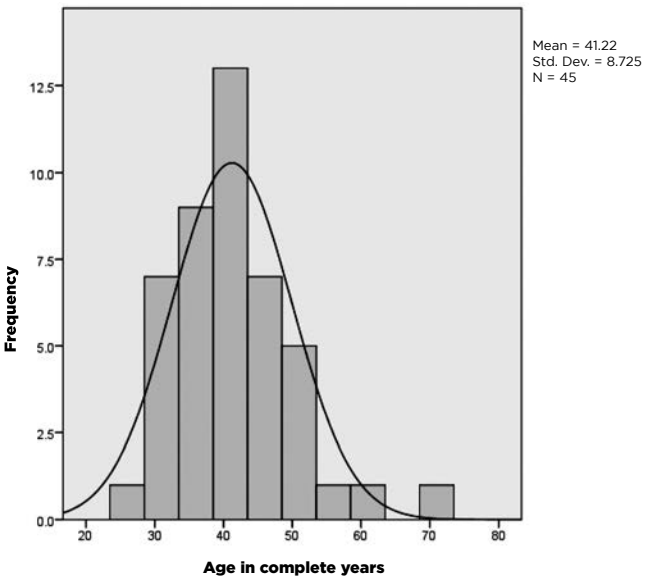

Figure 2: Distribution of age in years

40% of the study subjects had completed secondary education while 24.4% had tertiary education, and the reminder had primary level education

A greater proportion of (62.7%) patients were overweight by body mass index (BMI), as shown below.

BMI	%	Median	p-value
Normal	21.5	5 (Overweight)	<0.01
Overweight	62..7		
Obese	15.6		

Table 1: BMI of the study subjects.

Indication for surgery

The main pelvic gynaecological surgery performed was total abdominal hysterectomy 26(57.8%) with the main indication for the surgeries being symptomatic uterine fibroids.

Peri-operative pain management

Drug Combination	Frequency	%	p-value
Codeine + paracetamol	1	2.2	<0.01
Diclofenac	3	6.7	
Morphine + Tramadol	6	13.3	
Diclofenac + Morphine	6	13.3	
Diclofenac + Paracetamol	6	13.3	
Diclofenac + Tramadol	1	2.2	
Diclofenac + Pethidine	1	2.2	
Morphine + Diclofenac + Paracetamol	15	33.3	
Diclofenac + Tramadol + Morphine	1	2.2	
Diclofenac + Pethidine + Morphine	2	4.4	
Diclofenac + Pethidine + Paracetamol	3	6.7	

Table 3: Systemic peri-operative analgesia combinations

TAP block

Registrars (Master of Medicine in anaesthesia students) were the main 31(68.9%) anaesthesia providers who performed the TAP block as shown in Table 4 below.

Anaesthesia Providers	Frequency	Percent	p-value
Consultant Anesthesiologist	14	31.1	0.017
Registrar	31	68.9	

Table 4: Anaesthesia providers who performed TAP blocks

Pain Scores

The overall average pain score in the postoperative period under study was 2.138 (mild pain).

Time of pain observation	Minimum	Maximum	Mean Score	Std. Error	Std. Deviation
Immediately	0	6	2.58	.205	1.373
After 6 hours	0	6	2.38	.197	1.319
After 12 hours	0	6	2.11	.206	1.368
After 18 hours	0	6	1.95	.179	1.174
After 24 hours	0	6	1.67	.181	1.132
Overall Mean			2.138	0.1936	1.2732

Table 5: Pain scores

Time to first request for analgesia

The average time to first request for analgesia was 9 hours. 33 patients requested for analgesia 15 were given tramadol, 9 given morphine and 6 given paracetamol. 3 of the patients who requested for additional analgesia were not given and no reason provided. 12 patients did not request for additional or rescue analgesia.

Time to ambulation

The average time to complete ambulation was 18 hours when the patients was up and about comfortably without strain and pain.

Minimum	Maximum	Mean	Std. Error	Std. Deviation
360	1440	1056	36.898	247.519

Table 6: Time (in minutes) to comfortable ambulation

Adverse effects encountered

Nausea, vomiting and diarrhoea were the side effects experienced post operatively. These were to be attributed to the anaesthetics and systemic analgesics administered.

Adverse Effects	Frequency	Percent
Nausea	16	35.6
Vomiting	7	15.6
Diarrhoea	1	2.2

Table 7: Post-operative adverse effects

Discussion

The demographic characteristics of the study subjects revealed a fair representation of the general population. With their levels of education, most of the study subjects easily understood the components of the study.

The combination of analgesic drugs used intraoperatively by most of the providers was morphine and diclofenac and for postoperative analgesia was morphine with diclofenac and paracetamol. These were noted to be the analgesics that were easily available in the hospital at the time of this study. However, the relationship between pain scores and intra-operative and post-operative analgesia combinations was not statistically significant (p-value=0.665).

The overall average pain score for the study subjects was 2 (mild pain) and average time to request analgesia was 9 hours postoperatively. 12 patients did not request for rescue analgesia. This can be interpreted that TAP block was effective, and therefore reduced systemic analgesic requirements in the immediate and early postoperative period.

These results are comparable to a study done by Ranjit et all **[12]** which compared the analgesic efficacy of TAP block with local bupivacaine infiltration in patients undergoing gynaecological surgeries with pfannenstiel incision and lower midline incision under general anaesthesia. Visual analogue scores were significantly less in TAP block group and effect lasted up to 12 hours at rest postoperatively and 8 hours during cough and movement and thus concluded that bilateral TAP block was effective in reducing postoperative pain scores for 8 to 12 hours postoperatively and opioid requirement.

In a similar study, Atim et al **[14]** carried out a prospective, double-blind randomized controlled study to evaluate the efficacy of ultrasound guided transversus abdominis plane (TAP) block and bupivacaine infiltration of the skin and subcutaneous tissue of the wound in patients undergoing hysterectomy. Both the TAP and infiltration groups had lower movement and rest pain scores than the control group, with lower scores in the TAP group than the infiltration group at 6 and 24 hours. Total tramadol consumption was significantly lower in the TAP group than in the other groups at all-time points. They concluded that ultrasound-guided TAP block reduced rest and movement pain after total abdominal hysterectomy and was more effective than superficial wound infiltration for postoperative pain management.

Vijayalakshmi et al **[15]** also carried out a prospective randomized controlled trial to compare the analgesic efficacy of transversus abdominis plane block with that of direct infiltration of local anaesthetic into surgical incision in lower abdominal procedures. They also concluded that TAP block is an effective means of analgesia for lower abdominal surgeries with minimal side effects.

Marais et al **[18]** evaluated the postoperative analgesic efficacy of bilateral ultrasound-guided TAP blocks, in patients undergoing total abdominal hysterectomy. Morphine consumption during the first 24 hours and pain scores at 0, 6 and 24 hours postoperatively.

The average time to complete ambulation when the patient was comfortably up and about without strain and pain was noted to be 18 hours after the surgery which is a good indication for fitness of the patient for discharge. Adequate rest and dynamic analgesia post operatively reduce length of hospital stay and risks of deep venous thrombosis (DVT). Pelvic gynaecological surgeries are among the surgeries with an increased risk of DVT.

Conclusion

Single shot ultrasound guided TAP block after pelvic gynaecology surgeries in combination with conventional

analgesia is effective in reducing pain scores for 8 to 12hrs post operatively, reduction of opioid requirement and also rest and movement pain encouraging early ambulation with minimal side effects.

Recommendations

Routine use of ultrasound guided TAP block in combination with conventional analgesia in pelvic gynaecological surgeries for post-operative pain management should be encouraged. A randomized double-blinded multicentre clinical trial to assess the efficacy of adding TAP block for post-operative pain control for our local population should be carried out.

Limitations

Lack of standardisation of the systemic perioperative analgesia regimen.

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Case Report

Awake Burr Holes In A Patient For Evacuation Of Acute On Chronic Subdural Haematoma

Adembesa Isaac[1], Gikonyo Antony[1], Gikonyo Dan[1], Kingori Mwangi[1], Shrikant Panchal[1]

1. The Karen Hospital

Abstract

We present an elderly patient with multiple co-morbidities who presented with acute on chronic subdural hematoma that required urgent evacuation under sedation with scalp block. There is no recognised consensus on anaesthesia for awake burr holes/craniotomy because the technique is always varied depending on pathology, surgeon, duration of surgery, and patient factors. We believe this case report will add to the body of knowledge on this topic.

Introduction

Patient Z J M 75 years old male admitted with a diagnosis of:

1. Acute on chronic bilateral subdural hematoma
2. Hyponatremia
3. Hypertension
4. Type 2 Diabetes Mellitus
5. Dilated cardiomyopathy
6. Chronic obstructive pulmonary disease
7. Obesity
8. Obstructive sleep apnoea
9. Chronic lymphovascular insufficiency
10. Persistent atrial fibrillation
11. Hypothyroidism
12. Gatroesophageal reflux disease

Case Report

Z J presented with 10 day history of confusion and loss of vision and 1 day history of generalised tonic clonic convulsions. He had been on home care with a continuous positive airway pressure (CPAP) machine that he uses at night. He used to smoke but stopped more than 40 years ago, drinks alcohol occasionally. He had previous transurethral resection of prostate (TURP) for benign prostate hyperplasia (BPH) and burr holes for subdural hematoma in 2015. He has been taking Losartan H, lamotrigine, olanzapine, atorvastatin, unicontin, robidom SR, xarelto, fluconazole, amaryl, duiride and levothyroxine on a regular basis.

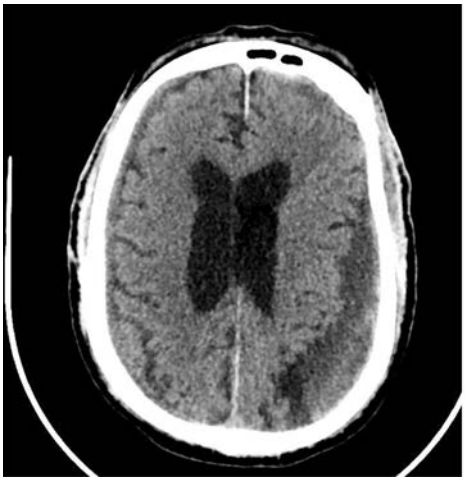
- On examination, morbidly obese weighing 124kg, bilateral lower limb swelling, delirious (hyperactive)
- Blood Pressure 144/90, SPO2 80% on facemask, Heart Rate 100-115
- Central nervous system: Glasgow Coma Scale 13/15
- Cardiovascular exam: In atrial fibrillation with fast ventricular response of 100-115
- Respiratory exam: Bilateral crackles
- Abdomen: central obesity, soft

Investigations

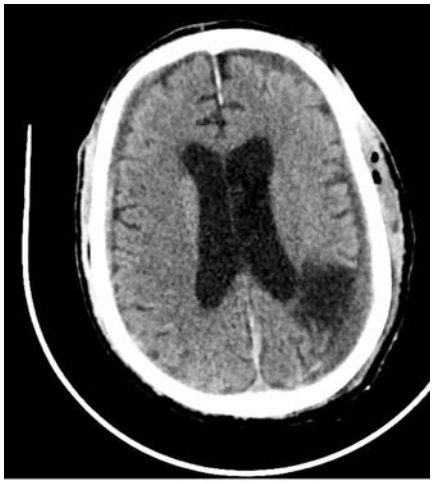
- CT Brain - Bilateral subdural hematoma Left>Right
- 2D Echocardiogram- Dilated heart chambers, EF 35%
- Electrocardiogram - Atrial fibrillation, Right bundle branch block, widened QRS 136ms
- International Normalised Ratio-1.3
- Full hemogram - White Blood Cells 8.58 Hemogram 13.9 Platelets 341
- Chest X ray- Hyperinflated lungs
- Thyroid function tests - Normal
- Urea, Creatinine and Electrolytes- Na+ 120, K+ 3.0 Urea 6.1 Creatinine 125

Patient had hyponatremia and hypokalemia corrected with 3% hypertonic saline and potassium chloride. Xarelto was stopped and patient was booked for theatre 2 days later after family conference where risks of general anaesthesia with mechanical ventilation were explained. They consented for scalp block with sedation.

CT scan brain before evacuation of hematoma



CT scan brain after evacuation of subdural hematoma



Intraoperative

Standard American Society of Anaesthesiologists monitoring
Oxygen via facemask 6l/min.
Capnograph placed in the mask to confirm ventilation.
Patient positioned supine, head right lateral in a head ring.

Methodology and Results

Left side scalp block using landmark technique- 15mls 0.25% bupivacaine and 1% lignocaine with adrenaline 1:200000. 2mls to supraorbital nerve, 2mls supratrochlear nerve, 2mls zygomaticotemporal nerve, 3mls auriculotemporal nerve and 6mls to greater auricular nerve, lesser occipital and greater occipital nerves. The surgeon also infiltrated a total of 10mls of 2% lignocaine with 1:200000 adrenaline at the incision site for burr holes.

Sedation with dexmedetomidine 0.5-1mcg/kg/hr (ideal body weight of 80kg) varied according to level of surgery to maintain spontaneous ventilation without any airway device. This infusion was started preoperatively in the intensive care unit. No loading dose was given.

Intravenous paracetamol 1g, dexamethasone 8mg, Zofran 4mg and zinacef 1.5g.

Patient hemodynamically stable intraoperatively. Moderately sedated with Ramsey score ranging 3 to 4. Hematoma successfully evacuated with 2 burr holes.

Patient transferred back to ICU, remained hemodynamically stable. Neurologically improved over the course of 5 days in ICU then transferred to the ward and was discharged home after 10 days in hospital.

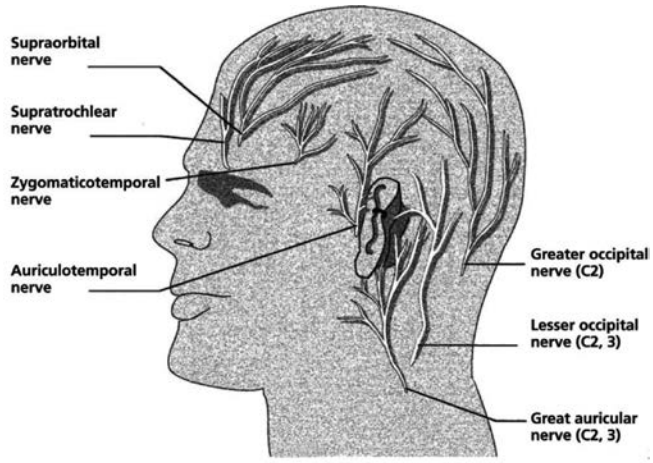
Discussion

The history of awake craniotomy predates the existence of anaesthesia whereby trephining the skull was done to get rid of evil air (1). It has become quite popular in the recent past due to improvement in diagnosis, advanced functional neurosurgical techniques, better anaesthetic agents and patient expectations (2). Previously, awake craniotomy was used for excision of epileptic foci but of late, it is used for excision of supratentorial tumors involving functional cortex (3). In this particular case, we opted for awake burr holes given the probability of high mortality and risk of prolonged ICU ventilation with general anaesthesia.

The term awake craniotomy is misleading because the patient is not entirely awake throughout the procedure (3). Patient tolerance of the surgery is dependent on adequate analgesia as well as a bit of sedation. As scary as it might appear, Rafael Texeira et al demonstrated in a prospective qualitative study that awake craniotomy was well tolerated and yielded high patient satisfaction and should be embraced (4). Serdal et al in a retrospective study in Turkey looking at awake burr holes in geriatric patients showed early mobilisation, early oral intake and avoidance of general anaesthesia (5). Various techniques are used; asleep-awake, asleep-awake-asleep or awake throughout approach (2). Despite the documented safety and benefits, awake craniotomies or burr holes are rarely done in the developing countries where Kenya is included.

Targeted individual nerve scalp blocks is more effective compared to the traditional local anaesthesia infiltration (6). Seven nerves are blocked using landmark technique. Four nerves (supraorbital, supratrochlear, zygomaticotemporal, auriculotemporal) are branches of the trigeminal nerve while three (greater auricular nerve, greater occipital and lesser occipital nerves) originate from cervical nerve roots C2 and C3 (6). All the nerves have to be blocked on both sides for a complete scalp block (6). In this particular patient, only left sided block was done since only the left sided subdural hematoma was evacuated.

Dexmedetomidine is a highly selective - 2 agonist having unique sedative, anxiolytic and analgesic effects with minimal effect on ventilation. It reduces opioid requirements by 30 to 50% (7). Uyar et al demonstrated in a study that dexmedetomidine also attenuates hemodynamic and neuroendocrine response to skull pin head-holder application during craniotomy (7). This is especially important in patients with cardiac comorbidities who require minimal hemodynamic changes intraoperatively. Our patient had multiple respiratory and cardiac comorbidities hence the choice of dexmedetomidine for sedation.



Reproduced from Costello and Cormack

Conclusion

Awake burr holes/craniotomies with sedation should be considered in frail patients who are at a high mortality risk with general anaesthesia.

Funding

No funding was received for this case report.

Informed Consent

We received informed consent from patient's relatives for the procedure and to publish the case report.

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Case Report

Inadvertent Placement Of Central Venous Catheter In Azygos Vein: Early Recognition Is Important To Prevent Complication

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Abstract

Central Venous Catheterization is generally safe, especially with use of ultrasound guidance; these catheters can cause significant complications which can be lethal, if not recognized. Inadvertent azygos vein cannulation is very rare complication of central venous catheterization, especially from left side. This can cause several complications, including rupture of the azygos vein. This complication can also occur from the more commonly used right internal jugular vein access and can be suspected when there is poor blood flow during aspiration from CVC port; azygos vein cannulation can be confirmed by fluoroscopy or chest x ray. These malpositioning of CVC should be repositioned under fluoroscopy or by manipulation by an experienced nehrointensivist. Early recognition is extremely important to prevent catastrophic consequence. We present two unusual cases of misplacement of both left and right internal jugular vein haemodialysis catheter tip in to azygos vein and managed successfully without any complication.

Key words: Central Venous Catheter (CVC), Haemodialysis, Internal Jugular Vein (IJV), Superior Vena Cava (SVC), Malpositioning, Azygos Vein, Fluoroscopy.

Introduction

Central venous catheters are commonly inserted today in the management of patients requiring emergent, frequent or long-term venous access for various reasons (e.g. high volume resuscitation, colloids, vasopressors, inotropes, antibiotics, blood and blood products, hemodynamic monitoring, haemodialysis etc.). The most optimal location for the distal tip of such deployed central venous catheters is in the distal superior vena cava or proximal right atrium. Although generally safe, especially with use of ultrasound guidance, these catheters can cause significant complications which can be lethal, if not recognized. Possible complications include rupture of the internal carotid artery, pneumothorax, rupture of the vein, thrombosis, obstruction of the airway, infection and migration of the catheter into other vessels. Azygos vein cannulation is a rare complication of central venous access (0.7-%1.2%) [1]. When misplacement to azygos veins, the insertion goes smoothly during the procedure but afterward, blood flow remains very poor from the catheter. It shows that the guidewire enters to azygos veins system. Early recognition and radiological confirmation is important as inadvertent azygus venous cannulation may be complicated by azygos vein perforation and can cause bleeding in pleural cavity which is a low pressure cavity, can cause respiratory failure [2]. We present two unusual cases of misplacement of both left and right internal jugular vein haemodialysis catheter tip in to azygos vein.

Case Summary:

Case 1

A 35 year old male with history of Hypertension and End Stage Renal Disease on maintenance haemodialysis was admitted with malfunctioning haemodialysis access (Right-Arterio-venous fistula). He was due for haemodialysis and it was difficult to dialyze him with Arterio-Venous fistula. His Left internal jugular vein (IJV) was cannulated by a short term double lumen haemodialysis catheter via modified seldinger's technique and the procedure went uneventful. Post procedure chest x ray was done; the haemodialysis catheter crossed the mid line and the tip was assumed to be touching the lateral wall of Superior Vena Cava (SVC) Figure-1.

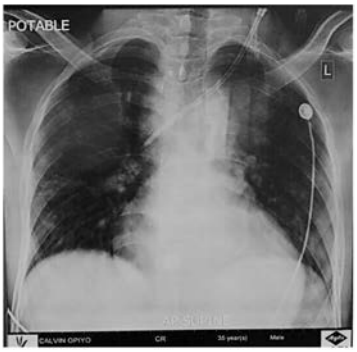

Figure-1: Chest X ray PA- Left IJV Central Venous Catheter crossing the midline and the tip in the SVC touching the lateral wall of SVC

The patient was started on haemodialysis, after few minutes of haemodialysis it was noted that flow was very poor in both port of haemodialysis catheter. The catheter was manipulated by the dialysis technician but it was not successful. The renal physician was asked for the next step. Dialysis was stopped and the patient was taken for lateral chest x ray. The lateral

chest x ray revealed the tip of the haemodialysis catheter was outside the right cardiac border. As per the radiology report the tip of the haemodialysis catheter was in azygus vein. [Figure-2]

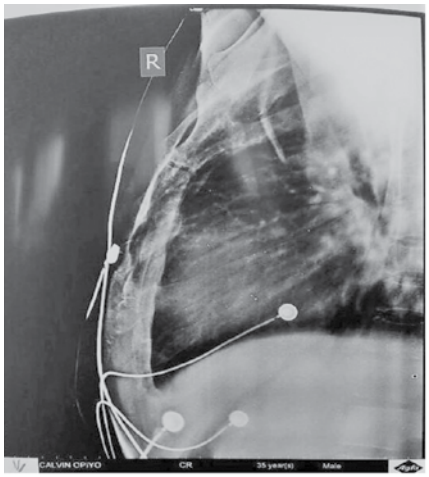

Figure-2: Chest X ray Lateral- Left IJV Central Venous Catheter – Tip lying outside the cardiac border

The haemodialysis catheter was manipulated by the renal physician and good flow was achieved from both lumens.

Case 2

A 60 year old male admitted for insertion of long term haemodialysis catheter insertion. He was a patient with End-Stage-Renal-Disease, Diabetes Type II and Hypertension. His right internal jugular vein (IJV) was cannulated by a double lumen long term haemodialysis catheter via modified seldinger's technique, the procedure went uneventful. His post procedure chest x ray revealed a sharp bent of catheter tip within the lumen of Superior Vena Cava (SVC). As per radiology report the catheter tip malpositioned in the azygus vein which is opening from the posterior wall of Superior Vena Cava. [Figure-3]

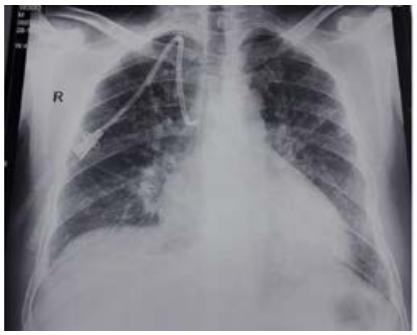

Figure-3: Chest X ray PA-Right IJV Central Venous Catheter, abrupt bend of Catheter tip within the SVC

The catheter was manipulated by the renal physician and repeat chest x ray revealed catheter tip within the lumen of Superior Vena Cava and good flow was achieved from both lumens. [Figure-4]

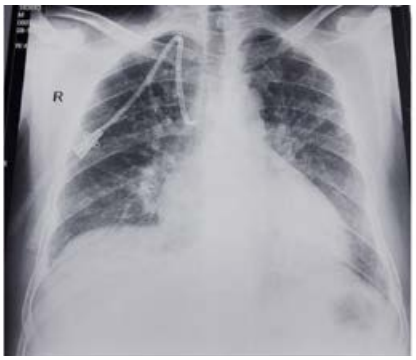

Figure-4: Chest X ray PA-Right IJV Central Venous Catheter Tip within the SVC, after repositioning

Discussion

Central Venous Catheter insertion is common procedure in Intensive care unit for various reasons (e.g. high volume resuscitation, colloids, vasopressors, inotropes, antibiotics, blood and blood products, hemodynamic monitoring, haemodialysis). Despite the use of ultrasound and fluoroscopic guidance techniques for these common procedures, the complication rates associated with central venous access remain high (>15%) [3, 4]. The common complications are; arterial puncture, pneumothorax, venous thrombosis, infection and malpositioning of catheter tip in other vessels. Accidental azygos vein cannulation is very rare (0.7-%1.2%), [1] and can causes life threatening complication if remains unrecognized. A case of severe respiratory failure due to massive haemothorax form azygos vein perforation after inadvertent cannulation has been reported [2].

The azygos vein usually arises from the posterior aspect of the IVC at the level of the first or second lumbar vertebra, and connects the IVC to the SVC [Figure-5].It bulges into the pleural space or may even lie free within the pleural space [5]. Azygos vein joins the SVC after arching over the root of the right lung and joins SVC posteriorly [Figure-6] but in some cases this entry can be more lateral [6]. It is well known that the smaller veins such as the azygos have thinner walls and thus are predisposed to catheter irritation and erosion. These events can have significant consequences.

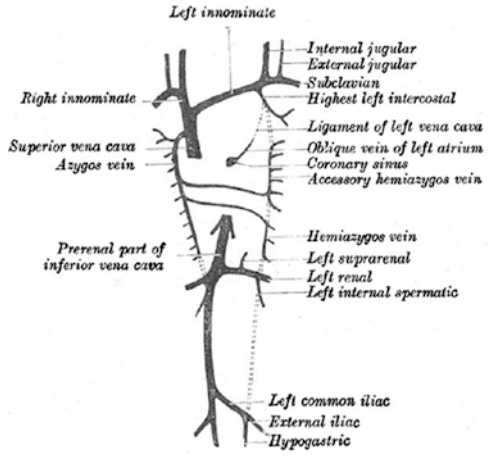

Figure-5: Course of azygos vein and other major veins in the human body (image courtesy Wikipedia) https://en.wikipedia.org/wiki/File:Gray480.png

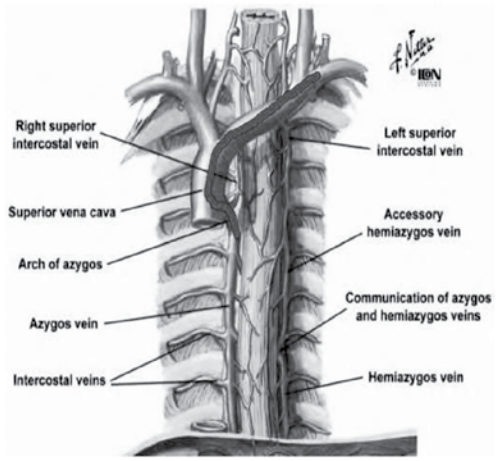

Figure- 6: Anatomy of Azygos vein: (Image courtesy Nimrah Ali) https://www.pinterest.com/nimrahali18/anatomy/

Inadvertent azygos vein cannulation more frequently occurs in conditions in which it might be dilated (as in heart failure) and needs to be recognized since it carries a risk of rupture of the vessel. In a study of 1,287 post procedural radiologic examinations of central venous cannulations, CVC malposition in the azygos vein was found in 16 (1.2%). Eleven (69%) of these catheters had been inserted through the left subclavian vein, three (19%) in the left jugular vein, two (12%) in the right subclavian vein, and none (0%) in the right internal jugular vein [1]. Malposition in the azygos vein is extremely rare from the right internal jugular vein with only one case report of this situation previously before our case [2]. Inadvertent azygos vein cannulation during catheter insertion from left internal jugular or left subclavian vein, the catheter tip goes outside the cardiac shadow which can be confirmed from lateral view of chest x ray. A Entry of the CVC into the arch of the azygos creates the abrupt bend, mostly if CVC inserted through right internal jugular or right subclavian vein [7], it can be seen in anteroposterior(AP) OR posteroanterior(PA) view of chest x ray. These malpositioning of CVC should be repositioned under fluoroscopy or by manipulation by an experienced nehrointensivist.

Conclusion

Inadvertent cannulation of azygos vein during insertion of central venous catheter is very rare. It is more common from the left internal jugular vein but not uncommon from the right internal jugular vein. Central venous catheter tip can cause azygos vein perforation due to its thin wall erosion and can cause massive haemothorax and respiratory failure, if left unrecognized. It can be recognized in chest x ray and fluoroscopy. An abrupt bend at the tip of a central venous catheter within the SVC in AP/PA chest x ray or catheter tip outside the cardiac border in lateral chest x ray. Early recognition and intervention is extremely important to prevent catastrophic consequences as we did in our two cases.

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TENTATIVE KENYA SOCIETY OF ANAESTHESIOLOGISTS 2019 CME CALENDAR

All these Events are CPD accredited.

DATE	TOPIC	Speaker	Sponsor	Venue
6th Mar	Guiding Patient Therapy Through Clinical Diagnostics	Dr. Idris Chikophe Dr. Boitumelo Phiri	Thermofisher	Boma, Eldoret
14th Mar	Sepsis	Dr. David Odaba	Sandoz	Crowne Plaza
28th Mar	Obstructive Sleep Apnea	Dr. Louis Litswa	GSK	Crowne Plaza
30th Mar	Critical Care GAT Symposium	Multiple	Takeda	9 West
4th Apr	Post-Operative Pain Management		Menarini	
11th Apr	Post-Operative Nausea and Vomiting		Sandoz	
13th Apr	Medicolegal Symposium	Several	Several	TBC
25th Apr	Insulins in Critical Care		Eli Lilly	Panafric/ Double Tree
11th May	Kisumu Symposium		Sanofi	Acacia Premier
16th May	Post-Operative Nausea and Vomiting		Sandoz	

27th KSA & 7th CCSK
ANNUAL SCIENTIFIC CONFERENCE
21st - 23rd August 2019
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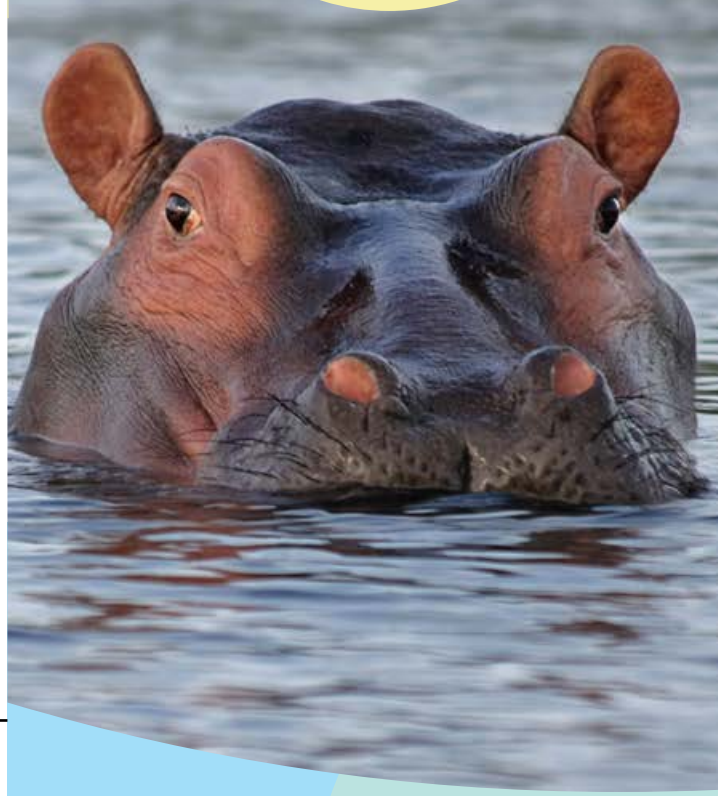

Theme:
Think Global, Act Local: Changing Perspectives

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Sub Themes

- Mental Wellness
- Anaesthesia Environment
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THERAPEUTIC INDICATIONS Enoxaparin is a low-molecular-weight heparin (LMWH), for use in the following indications: Prophylaxis of venous thromboembolism: Moderate to high risk surgery, in patients who are bedridden, Prevention of clotting in the extracorporeal circulation Curative treatment of non-clinically serious, established deep vein thrombosis, with or without pulmonary embolism. Treatment of unstable angina and acute non-Q-wave myocardial infarction (MI), when administered in combination with aspirin. Treatment of acute ST-segment elevation myocardial infarction in combination with a thrombolytic agent in patients to be managed or not by subsequent Percutaneous Coronary Intervention (PCI) **POSOLOGY AND METHOD OF ADMINISTRATION** Subcutaneous route of injection (except for patients on Hemodialysis).This proprietary medicinal product is for use in adults. Clexane is not intended for intramuscular administration. 1 ml of solution for injection is equivalent to approximately 10 000 Anti-Xa IU of enoxaparin. **CONTRA-INDICATIONS** hypersensitivity to enoxaparin, heparin or its derivatives, including other LMWHs; history of serious type II heparin-induced thrombocytopenia (HIT), bleeding or tendency to bleed related to impaired hemostasis. organic lesion likely to bleed; clinically significant active bleeding. This medicine is generally not recommended in severe kidney failure, in the first 24 hours after intracerebral haemorrhage and elderly patients on acetylsalicylic acid, NSAIDs and dextran 40 **SPECIAL WARNINGS AND SPECIAL PRECAUTIONS FOR USE** Special warnings - Hemorrhagic risk - The recommended therapeutic regimens must be complied with (dosages and duration of treatment). Failure to comply with these recommendations can lead to hemorrhage, particularly in at-risk patients (e.g. the elderly, patients with renal failure). Risk of heparin induced thrombocytopenia, Use of enoxaparin in children: as no data is available use of enoxaparin in children is not recommended. Precautions for use - Hemorrhage - As with all anticoagulants, bleeding can occur (see Section 4.8). If bleeding occurs, the cause of the hemorrhage must be investigated and appropriate treatment instituted. - Kidney function - Before LMWH treatment is initiated, it is essential to evaluate kidney function, particularly in subjects aged 75 years or over. **INTERACTIONS** Inadvisable combinations Acetylsalicylic acid at analgesic, antipyretic and anti-inflammatory doses, Non-steroidal anti-inflammatory drugs and Dextran 40 (parenteral use) **PREGNANCY** Pregnancy: There is no evidence from animal studies that enoxaparin has teratogenic effects, therefore no such effects are expected in humans. As a precaution, enoxaparin should preferably not be administered prophylactically during the 1st trimester of pregnancy. Enoxaparin should only be administered as preventive treatment during the 2nd and 3rd trimesters of pregnancy if considered necessary. **UNDESIRABLE EFFECTS** Hemorrhage, Thrombocytosis, thrombocytopenia, allergic reactions, Hepato-biliary effects: hepatic enzyme increase, skin and subcutaneous tissue disorders: urticarial, pruritus, erythema, General disorders: injection site hematomas, pain and edema. For uncommon, rare and very rare side effects see full prescribing information **OVERDOSE** Accidental overdosage following subcutaneous administration of massive doses of low molecular weight heparin may lead to hemorrhagic complications. If hemorrhage occurs, certain patients can be treated with protamine sulfate. The protamine dose required depends on: • The heparin dose injected (the activity of 100 Anti-Xa IU of low molecular weight heparin is neutralized by 100 anti-heparin units of protamine), if enoxaparin sodium was administered within the last 8 hours, • The time elapsed since the heparin injection **PHARMACODYNAMIC PROPERTIES** Pharmacotherapeutic group: Antithrombotic agent - ATC code: B01AB05
Date of SMPC Text revision: 4th January 2016 Date of SMPC abbreviation and approval: 5th December 2017

For more details please refer to the full prescribing information, date of last revision 29 July 2016.
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