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Research Article

**HOW FREQUENT ARE CARDIAC ARRHYTHMIAS AFTER
CENTRAL VENOUS CATHETERIZATION IN PATIENTS
ADMITTED IN INTENSIVE CARE UNIT?****¹Dr. Muhammad Bilal Anwar, ²Dr. Ehsan Ul Haq, ³Dr. Rabia Saleem****¹MBBS, King Edward Medical University Lahore, Pakistan., ²MBBS; Services Institute of Medical Sciences, Lahore, Pakistan., ³MBBS, Alnafees Medical College Islamabad, Pakistan.****Abstract:**

Objective: In critically ill patients' central venous catheterization is commonly practiced. The aim of this study is to estimate the risk of cardiac arrhythmias associated with CVC (central venous catheterization).

Methods: Total 100 patients were included in study who underwent central venous catheterization. 3ml blood was collected from all patients for study of serum sodium, potassium, creatinine and blood urea nitrogen level. Electrocardiography (ECG) was done during and after the procedure. Vitals were monitored before and after catheterization.

Results: The rate of arrhythmias as studied by ECG was; 3 AF, 6 VT, 6 PAC and 6 PVC. Previous catheterization, sex and serum electrolytes levels had significant association with the rate of arrhythmias in patients.

Conclusion: Although central venous catheterization is a small operative procedure but due to its association with cardiac arrhythmias, it must be performed in ICU with proper arrangements to overcome arrhythmias, if occur. Vitals monitoring should also be done before, during and after the procedure.

Key Words: arrhythmia, central venous catheterization, Electrocardiography.

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INTRODUCTION:

Central venous catheterization is a commonly practiced procedure in ICU settings. It helps in medication and monitoring of critically sick and hemodynamic unstable patients which is not possible by peripheral line [1]. In ICU settings CVP line is used to measure central venous pressure as well as to give medications. The seldinger technique introduced in 1953[8] is commonly practiced in ICU patients in order to insert central venous catheter, double lumen catheters for hemodialysis, arterial catheters and chest tubes. These are quite commonly practiced procedures, and are associated with complications in 15% of cases [2].

There are 2 types of complications, immediate and late complications. The immediate complications occur during catheter insertion which are either pulmonary, cardiac etc. while late occurs after insertion of catheters infections, catheter dysfunction or displacement.[3]

METHODS AND MATERIALS:

In this prospective study total 100 patients were included, those who underwent central venous

catheterization. Serum electrolytes and renal function tests were performed on all patients and ECG was performed before catheterization. Vitals signs monitor and ECG monitoring was continued throughout the procedure. ECG was recorded in DII long method. A checklist to record patients' demographic data previous history of catheterization was recorded. The data was analysed using SPSS version 16 and qualitative and quantitative data were studied in form of frequencies and mean, median, mode, respectively.

RESULTS:

Out of 100 understudy patients, 54 were males and 46 were females. Most patients were between 40 to 60 years (34%), 26 patients had past history of CVC present. In 90 patients CVC was done in right jugular vein, 8 in left jugular and 1 patient each had subclavian insertion.

16cm catheter was inserted in 90 individuals, 20cm in 8 and one each had F11 and F12 catheterization done. 67% had systolic blood pressure more than 160 while 26 had between 120 to 160, 7 had BP less than 120. 5 patients already had arrhythmia, 2 with AF while three patients had PAC. Arrhythmias rate and their relation with age is shown in table:

sodium	potassium	Blood urea nitrogen	Creatinine
Less than 135(12)	Less than 3.5(0)	Less than 8 nil	Less than .7(1)
135 to 145(76)	5 to 3.5(64)	8 to 20 nil	.7 to 1.4(70)
More than 145(12)	More than 5(36)	More than 20(100)	More than 1.4(29)

Table:1 Serum level of Na, K, BUN, Creatinine.

Sinus rhythm	>49 years	50 to 59 years	60 to 69 years	>70 years	P value
	11	12	22	25	0.503
AF	0	0	1	1	
VT non sustain	2	3	3	0	
PAC	0	2	3	0	
PVC	1	2	2	1	
Total patients	14	19	31	27	

Table:2 Arrhythmias and their relation to age.

DISCUSSION:

In ICU patients Central venous catheterization (CVC) is a lifesaving procedure, it is used for hemodialysis, to give medicines and to monitor central pressure in severely hemodynamically unstable individuals. The procedure is associated with many complications [4]. The understudy title focuses on studying the frequency of cardiac arrhythmias associated with these procedures and its frequency in different age groups. This effect was studied on 100 patients who underwent CC insertion. The arrhythmias were studied by ECG, chest electrodes were attached during the procedure and rate of different arrhythmias was recorded.

Arrhythmias were more commonly seen in more than 60 years age group.

The arrhythmias most commonly occur due to mal-insertion of guide wire or dislocation of central venous catheter [5]. The better nursing care and proper monitoring before, during and after procedure prevents and timely management of the complications. These procedures should only be performed in tertiary care hospital or in well facilitated ICU settings to decrease mortality and morbidity associated with it [6]. Use of better expertise and ultrasound guided insertion or post insertion better nursing care can avoid the complications [7].

CONCLUSION:

Although central venous catheterization is a small operative procedure but due to its association with cardiac arrhythmias, it must be performed in ICU with proper arrangements to overcome arrhythmias, if occur. Vitals monitoring should also be done before, during and after the procedure.

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