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Research Article

**ANALYSIS OF EARLY SURGICAL THERAPY OF INFECTIVE
ENDOCARDITIS IN CHILDREN****Dr. Ameer Hussain Shah¹, Dr. Muhammad Shahzad Alamgeer², Dr. Muhammad Suhaib
Abbas³**

¹Tehsil Headquarters Hospital Kot Sultan, District Layyah, ²Government Rural Dispensary Bait Wasawa Karlo Wala Tehsil and District Layyah, ³Government Rural Dispensary Hassan Abad Tehsil Taunsa Sharif District Dera Ghazi Khan.

Article Received: August 2020**Accepted:** September 2020**Published:** October 2020**Abstract:**

The main objective of the study is to analyse the early surgical therapy of infective endocarditis in children in Pakistan. This cross sectional study was conducted in Bahria University Medical and Dental College, Karachi during January 2019 to January 2020. The data was collected from 100 patients of age range 10 to 15 years. Five ml of fasting fresh blood sample was taken from all the patients. Then this blood was centrifuged at 4000 rpm for 10 minutes. The data was collected from 100 patients of both male and females. The mean age was 12.52±5.65 years. The mean values of serum ALP (203.92 U/l) and Ca (10.28 mg/dL) was higher in female subjects as compared to the male subjects. The noted in females and positive in male subjects. Significant correlation of CPK ($p = 0.001$) was found with age in females while positive correlation was found for CPK in both the groups with other variables. It is concluded that the association between dental procedures and the risk of IE remained insignificant after adjustment for antibiotic use, indicating that dental procedures did not increase the risk of IE.

Corresponding author:**Dr. Ameer Hussain Shah,**

Tehsil Headquarters Hospital Kot Sultan, District Layyah.

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INTRODUCTION:

Infective endocarditis (IE) is an uncommon but potentially devastating disease, with an estimated annual incidence ranging from 2 to 7.9 per 100,000 individuals per year and a short-term mortality of 10% to 30%. Infective endocarditis is rare in children but potentially carries high mortality and morbidity. Few data exist regarding surgical therapy and the associated outcomes in children with infective endocarditis. Through the breakdown of mucocutaneous barriers and induction of bacteremia, dental therapy and other invasive procedures have been linked to seeding of heart valves and the development of IE. Since the publication of the American Heart Association (AHA) guidelines in 1955, it has been conventionally considered appropriate to prevent IE by prophylactic administration of antibiotics before procedures believed to cause bacteremia [1]. However, the evidence supporting the effectiveness of antibiotic prophylaxis was poor, deriving solely from animal studies, case series, and assessments of bacteremia risk. Notably, the AHA guidelines in 1997 did acknowledge that most IE cases are not attributable to bacteremia resulting from certain invasive procedures, but rather random bacteremia from routine daily activities such as tooth brushing or chewing [2], and thus suggesting that prophylaxis may only prevent a small number of cases of IE. These guidelines also recognized the potential adverse effects and medical-legal risks associated with prophylaxis. In the absence of a robust evidence base, growing doubts with respect to this widely accepted practice led to a major revision of the AHA guidelines in 2007, narrowing the indications for antibiotic prophylaxis to a smaller population of at-risk individuals [3]. Furthermore, the 2008 guidelines from the National Institute of Health and Clinical Excellence (NICE) recommended that antibiotic prophylaxis be abandoned in most situations [4].

The AHA Committee had expected such substantial changes to stimulate prospective studies on IE prophylaxis. Recently, a meticulous analysis of epidemiological data by Dayer *et al* reported a

significantly increased incidence of IE in England (0.11 cases per 10 million people per month) that appeared to correspond with the NICE recommendations to cease antibiotic prophylaxis [5]. These data again urge the use of appropriate clinical trials to re-evaluate the effectiveness of IE prophylaxis. However, a large population base is required to obtain valid results for such an uncommon disease; a multi-centre prospective randomized controlled trial is still lacking. As an alternative approach, investigating the link between dental procedures and the risk of IE may assist in justifying or refuting this practice. Few epidemiological studies have been carried out in this area [6].

Aims and objectives

The main objective of the study is to analyse the early surgical therapy of infective endocarditis in children in Pakistan.

MATERIAL AND METHODS:

This cross sectional study was conducted in Bahria University Medical and Dental College, Karachi during January 2019 to January 2020. The data was collected from 100 patients of age range 10 to 15 years. Five ml of fasting fresh blood sample was taken from all the patients. Then this blood was centrifuged at 4000 rpm for 10 minutes. Serum was separated and was analysed for the quantification of serum ALP, CPK and Ca using standard methods.

Statistical analysis of the acquired data was carried out using SPSS 21.0 software and Microsoft Excel. Values were reported as mean \pm standard deviation.

RESULTS:

The data was collected from 100 patients of both male and females. The mean age was 12.52 ± 5.65 years. The mean values of serum ALP (203.92 U/l) and Ca (10.28 mg/dL) was higher in female subjects as compared to the male subjects. The noted in females and positive in male subjects. Significant correlation of CPK ($p = 0.001$) was found with age in females while positive correlation was found for CPK in both the groups with other variables.

Table 01: Analysis of ALP, Ca and CPK values of serum

Gender	Parameter	ALP		CPK		Ca	
		r	p	r	p	r	p
F	Age	0.269	0.094	0.497**	0.001	0.000	1.000
	BMI	-0.163	0.315	-0.163	0.316	0.402**	0.010
M	Age	0.012	0.943	0.205	0.204	-0.217	0.178
	BMI	0.130	0.422	-0.033	0.815	0.135	0.407

DISCUSSION:

So far, no prospective, randomized, placebo-controlled trial has been conducted to support or reject the use of antibiotic prophylaxis. Reports of prophylaxis failure and data from some case-control studies have challenged the rationale for prophylaxis that dental procedures increase the risk of IE. In a population-based case-control study of 273 cases of IE, Strom et al reported that MVP, congenital and rheumatic heart disease, and previous valve surgery were risk factors of IE, but not dental treatment [7]. They concluded that few cases of IE could be prevented with prophylaxis even with 100% effectiveness. In another case-control study of 171 cases of IE by Lacassin et al, dental procedures were not associated with an increased risk [8].

The underlying rationale of IE prophylaxis can be summarized as a 3-part theory: bacteremia leads to IE in at-risk patients with valvular or other cardiac abnormalities; bacteremia frequently occurs in consequence of certain invasive procedures [9]; and, as shown in animal studies, antibiotics administered before microbial challenge can reduce the risk of IE [10].

CONCLUSION:

It is concluded that the association between dental procedures and the risk of IE remained insignificant after adjustment for antibiotic use, indicating that dental procedures did not increase the risk of IE.

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