Research Article

Evaluation of serum cystatin C levels in fibroid patients in Elele

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Abstract

This study was aimed at determining the serum levels of cystatin C in fibroid patients.A total of 140 women were recruited for the study, 70 served as control while 70 were fibroid patients (test). Nephelometric Immunoassay Method in Mispa autoanlyser was used for the assay. The data were analysed with statistical package for social science (SPSS) version 20.The results showed significant difference ($P<0.05$) when cystatin C in fibroid subjects (2.6 ± 1.11mg/dl) were compared to control (1.0 ± 0.34mg/dl) and there was significant difference ($P<0.05$) when cystatin C levels were compared among the different age groups. It was concluded that cystatin C was elevated in fibroid women.

Keywords: Cystatin C, Fibroid patients, Elele

Introduction

Fibroids are noncancerous growths of the smooth muscle layer of the uterus. Fibroids can range in number and size from a single growth to multiple growths [1, 2].The prevalence of fibroid varies between 5-65% depending on age, ethnicity ,geographical region and quality of imaging techniques [3-5].Some fibroids may interfere with pregnancy although this appears to be uncommon [6]). Both genetic factors such as mutations and environmental factors such as obesity have been implicated in the development of fibroids [6].

Aim

The aim of this study was to determine cystatin C level in fibroid patients.

Materials and Methods

Study area

The research was carried out on samples from women with fibroid attending Madonna University Teaching Hospital (MUTH) Elele, Rivers State, Nigeria.

Study population

A total of 140 women were enrolled for the study, 70 were fibroid patients (test) and 70 were apparently healthy women (control) attending Madonna University Teaching Hospital (MUTH) Elele.

Ethical clearance

Ethical clearance was obtained from the ethics Committee of Madonna University Elele, through the Head of Department, Medical Laboratory Science which was approved by the management of Madonna University Teaching Hospital Elele.

Informed consent

Informed consent was obtained from the subjects before sample collection.

Sample collection

A 3ml of venous blood sample was collected from the subjects into plain tubes, allowed to clot and retract and the serum separated for the cystatin C assay.

Determination of cystatin C by Nephelometric Immunoassay method

Procedure

The assay was done with autoanalyser. The smart card was inserted, 100µl of R1 and 10 µl of sample added into the cuvette placed in cuvette holder, mixed automatically for 10seconds and incubated for 30seconds.After,140 µl of R2 was added into the cuvette and mixed for 10seconds,then the result was displayed and read.

Statistical analysis

Data obtained from this study were analysed using the statistical package of social science (SPSS) version 20.The results were expressed as mean ± standard deviation (SD). Independent sample t-test was used to compare means and values considerd significance at $P<0.05$.Analysis of variance (ANOVA) was used to compare means of the age groups.

Results

Table 1: shows comparison between cystatin C among fibroid and control subjects

Parameter	Control	Test	Level of significance
Cystatin C (mg/dl)	1.0±0.34	2.6±1.11	$P<0.05$

Table 2: shows the comparison of cystatin C among fibroid and control subjects based on different age groups

Groups (years)	Control	Test	Level of significance
35-40	0.92±0.30	2.8±1.24	$P<0.05$
41-45	1.1±0.37	2.9±1.07	$P<0.05$
46-50	1.1±0.31	2.1±0.87	$P<0.05$

Table 3: shows the comparison of cystatin C among fibroid subjects based on different age groups

Groups (years)	Cystatin C (mg/dl)
35-40	2.8±1.24
41-45	2.9±1.07
46-50	2.1±0.87

$P<0.05$

Discussion

Cystatin c is a protein encoded by the CST3 gene. It is a known biomarker of kidney function. Cystatin c is found in virtually all tissues and body fluids. The mean value of serum cystain c in fibroid subjects (2.6±1.11mg/dl) showed significant increase ($P<0.05$) compared to control (1.0±0.34mg.dl). This can be due to the increase in cellular activity in the fibroid growth.According to Akbari [7], increased cystatin c in late pregnancy and preeclampsia have been explained by changes in renal handling of the protein. There may be increased synthesis of cystatin c in fibroid patients [8, 9].

The results of the different age groups of fibroid and control subjects showed significant difference (P<0.05) when compared based on the age groups of the fibroid subjects. This shows that the age of the women is highly associated with the changes in the level of cyctatin c in the subjects [10].

Conclusion

It can be concluded that the serum levels of cystatin c is elevated in fibroid which could be due to increased cellular activity in the fibroid growth. This could be of diagnostic value in fibroid and in the management of the patients. It is crucial to monitor cystatin c to find out the level of renal derangement in fibroid patients.

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