

Plasma fibrinogen concentration among Gbagis Tribe in Kwali Area council federal capital Territory Abuja

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ABSTRACT

An epidemiological and a clinical study indicate either the elevation or decrease in plasma fibrinogen concentration that are associated with different kind of medical conditions e.g coronary heart disease, smoking behavior ,which play a mediating role in relation of smoking to coronary heart disease. These cross-sectional studies of 120 people consisting of male and female, which were analyzed for plasma fibrinogen concentration at a different time at 1hr,24hr,48hr and at 72hr respectively. The results show a relatively stable plasma fibrinogen concentration in all the patients though there was a slight different between the male which shows a relatively stable values from the pre-values, at 1hr,24hr and 48hr respectively, while the female shows a decrease at 1hr-48hrs compared to the pre-value.

Keywords : Fibrinogen, Plasma, Gbagis

INTRODUCTION

There is an increasing interest in the contribution of plasma fibrinogen concentration. An epidemiological cohort studies suggest that plasma fibrinogen is an independent risk factor for coronary heart disease (stone and Thorp 1985, Meade et al, 1986, Kannel et al 1987, Yarnell et al 1991). As evidence accumulates to implicate plasma fibrinogen in the pathogenesis of coronary heart disease, it become important to examine what factors may determine plasma fibrinogen concentration Ernest 1993 suggested that the epidemiological and clinical evidence consistently indicate an elevated plasma fibrinogen concentration is related to cardiovascular events. Elevated fibrinogen has been associated with smoking and serum cholesterol level, as well as diabetes, obesity, low level of HDL cholesterol and high white blood cell count, whether fibrinogen represents a causal risk factors or an associated risk marker remains unresolved, fibrinogen plays a significant role as a marker for chronic inflammatory processes reflecting active atherogenesis and possibly may play an active role in the development and progression of atherosclerotic lessons. (Fuster et al 1993 Tracy et al 1992)

The job related stress is considered as a potentially important factor in the development of cardiovascular disease (CVD) increased in plasma fibrinogen has been indicated as the possible

mechanism of job stress leading CVD (Karsl et al 1996, Friedman et al 1999, Shaved that blood clotting time was accelerated when workers suffered qualitative occupational stress (Netterson et al 1991 and Folson et al 1993. Have shown a tendency toward high plasma fibrinogen concentrations in the high stain (low control and high psychological demands at work) group. Davis et al 1995 indicated that female workers who perceived high job stress or low support from their boss had increased plasma fibrinogen concentrations, independently of menopausal status. Markowe et al 1995 have shown that control over the work is inversely related to plasma fibrinogen concentrations and recently Brimmer and his colleague 1996 have confirmed the associations in larger samples of the British civil servants.

Recent comparisons of plasma fibrinogen and its correlates among elderly men and women between Japanese and American Populations indicate Japanese of the akita, Japan study have significantly lower fibrinogen levels than either European or African Americans participating in the Atherosclerosis risk in communities study (Iso et al 1993)

The purpose of this study was to provide the first description of the plasma fibrinogen concentrations among the Gbagis and relate to their culture and way of life and work.

MATERIALS AND METHOD

Study Population: Kwali is located in south western part of federal capital territory Kwali area council about 20km away from Gwagwalada. The area has the Gbagis as a major tribe, and also with the highest population. A total of 120 people consisting of female and male were recruited for the work.

Sample Collection and Laboratory Analysis

0.5mls of blood was collected by clean venepuncture from the study participant using needle and syringe with a minimum Venous Stasis, into EDTA container. 1 hour, at 24 hours, 48 hours and at 72 hours respectively and the blood was centrifuged and the plasma separated from the cells into a plain bottle, and was analyzed using clot weight method (Ingram 1961)

PROCEDURE FOR PLASMA FIBRINOGEN CONCENTRATION (PFC).

1ml of plasma was dispensed into the tube and 1ml of pre-warmed calcium chloride was added and was mixed thoroughly, and applicator stick was inserted and incubated for 30min at 37°C in water bath when all the fibrin had wound round the stick, the adhered fibrin was removed from the applicator stick after washing 3-4 times with distilled water. It was blot dried carefully with filter paper, the adherent was clean petri dish for 3-4 days at room temperature to dry after which it was weighed and the plasma fibrinogen concentration was calculated.

Using the formula

$$\text{PFC} = \frac{\text{Dry Weight}}{\text{Volume of Plasma}} \times 100$$

Volume of Plasma

Statistical Analysis of Data

The data were processed and analyzed and summarized as Mean \pm SD, SEM and compared using Mann-Whitney U-test at a statistical significance study power of 95% confidence limits at a probability level of 5%.

RESULT AND DISCUSSION

The Mean \pm SEM of plasma fibrinogen concentration in all the patients, show a decreased after 1 hour and subsequently stable at $P > 0.001$ till the 48 hours where there was a sharp increased and at 72 hours, it began to go back to the pre-value.

Table 1 showing overall result of the study participant

Parameters	Pre-Value	1 Hour	24 Hours	48 Hours	72 Hours
Mean \pm SD SEM of PFC (g/dL) of all participant.	1.8 \pm 0.15	1.5 \pm 0.11	1.55 \pm 0.10	1.55 \pm 0.10	1.82 \pm 0.08
Mean \pm SD, SEM of All male patient PFC (g/dL).	1.8 \pm 0.11	1.8 \pm 0.17	1.8 \pm 0.16	1.7 \pm 0.12	1.9 \pm 0.13
Mean \pm SD, SEM of all female patient PFC (g/L)	1.4 \pm 0.12	1.31 \pm 0.09	1.2 \pm 0.06	1.2 \pm 0.08	1.7 \pm 0.08
Statistical comparison of all parameter with pre- value (PFC/L)	1.8 \pm 0.15	1.56 \pm 0.11	1.55 \pm 0.10	1.55 \pm 0.10	1.82 \pm 0.08

$P > 0.05$

Discussion

In a cross sectional analysis, we observed some position association and relationship between fibrinogen and CHD which have been documented in epidemiological studies of incident diseases and objective job (stressful) characteristics and plasma fibrinogen concentrations. Wilhemsen et al, 1984, Ernest 1993 Meade et al 1980, Kannel et al 1987. If an elevated plasma fibrinogen is correlate to hyper coagulable condition then the mechanism by which fibrinogen plays a role in the development of CHD may be via thrombotic haemostatic and rheological mechanism. Increased

plasma of fibrinogen is a direct determinant of increased plasma viscosity as well as induced reversible red blood cell aggregation there by significantly decreasing whole blood fluidity. Such rheological impacts could significantly alter in situ flow patterns at vascular sites predisposed to developing atherosclerotic lesion or enhance thrombotic potential.

Our study recorded, a relatively stable plasma fibrinogen concentration in all our considerations. Though these values seem to fall within normal range of 15-30g/dl and this is in agreement with the work of Famodu et al 2002, who state that 12.5% reduction in 1hr-48hrs after sample collection this observation is supported by 12% reduction observed amongst the Caucasian by Odom et al 1992 and since fibrinogen, a high molecular weight and a rheological active protein can be reduced but still maintained within normal range, a rheological advantage could be deduced.

The concentration of Mean standard deviation and standard error of mean of all male participant show a relatively stable values from the Pre, 1hour and 24hours respectively but there is a slight decrease at 48hrs even though not significant and also show a slight increase at 72hours which could be attributed to the objective job strain which associated with higher concentration of plasma fibrinogen which is in agreement with Whitehall study II by Burner and colleagues while among the female there was a slight decrease at 1 hour compare with the pre-value sample the decrease continue consistently at 24hrs and 48hr which is similar with that of the male.

This difference in association between plasma fibrinogen concentration and subjective job characteristic one hand and plasma fibrinogen concentration and objective job characteristic on the other hand need to be diseased.

Clearly plasma fibrinogen concentration seems to be affected by many social biological and behaviors factors and this is in agreement with the previous studies Folsom et al 1993, we found significance associations between plasma fibrinogen concentration and several sociodemographic variables in the univariate analysis. Social class (occupational class and educational level was shown to be correlated with plasma fibrinogen concentration as in other studies Markowe et al 1985, Meller et al 1991.

CONCLUSION

In conclusion our findings suggest that job characteristic particularly measured are related to plasma fibrinogen concentration is more relevant to both male and female

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