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PROTHROMBIN TIME AND ACTIVATED PARTIAL THROMBIN TIME VALUES AMONG GERIATRIC IN NATIONAL HOSPITAL ABUJA NIGERIA

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ABSTRACT

Coagulation profile(prothrombin time (PT) and activated partial thromboplastin time(APTT) are screening test for Haemostasis. 40 patients consisting of male and female, undergoing surgery at National Hospital Abuja were recruited for this research work, and were screened for PT and APTT. The result shows an increase in the value PT and APTT at one hour of sample collection among the study subjects and decrease in the subsequent hours to the normal value. The result shows an increase in the male compared to the female one even though the increase was not significant, this could raise a concern of a bleeding disorder, severe deficies of factor XII, and factor VII activity and fibrinolysis. This work is aim at determining the activity of coagulation profiles of older people who are undergoing surgery and it consequences.

Keywords : Prothrombin, thromboplastin, Geriatrics.

INTRODUCTION

The prothrombin time (PT), activated partial thromboplastin time (APTT) and bleeding time (BT) are screening test for haemostasis. Typical indications for ordering these test include hemorrhagic symptoms, monitoring of anticoagulant therapy, and routine pre operative screening(Mann et al,1999). When platelets and clotting factors circulate in an inactive form,blood flows freely through the vascular system. However, vascular injury and the resulting disruption of the endothelium lead to the initiation of a complex haemostatic response broadly classified into primary and secondary haemostatic response (Davie et al,1991), bleeding symptoms in the patients or in a member of the patients family can often prompt laboratory evaluation to test for bleeding disorder . To screen for bleeding disorders and to distinguish between congenital and acquired disorder s physician should obtain a detailed personal and family (haemostatic) history and perform a through physical examimination. Spontaneous bleeding (epistaxis, ease of bruising, joint bleeding) or unusual or unexpected bleeding after surgery. The PT, APTT and BT are screening test for heamostasis. The bleeding time test has lost favour in recent years, but the PT and APTT remain the most frequently ordered tests in coagulation medicine. To properly managed patient physicians must determine whether the prolonged PT, APTT and BT are artificial, medication related to

representative of haemostatic abnormalities.(Arkin et al,2003).

Activated Partial Thromboplastin Time.

The APTT is a measure of the integrity of the intrinsic and final common pathways of the coagulation cascade. The APTT represents the time, in seconds, for patients plasma to clot after the addition of phospholipid, an intrinsic pathway activator, and calcium. The APTT reagent is called partial thromboplastin because tissue factor is not present in conjunctions with the phospholipid as it is in the PT reagents.

Haemostatisis is the mechanism which involved maintenance of an intact vascular system, free from blockage in which the blood can circulate in fluid state. The normal haemostatic response to vascular damage depends on closely linked interaction between the blood vessel wall, circulating platelets and bloodcoagulants factors. The mechanism which in conjunction with inflammatory and general responses help protect the integrity of the vascular system after injury(Famodu et al,1987). The coagulant mechanism that maintains blood in fluid state it is the study of the blood to form clot and dissolve clot spontaneously to prevent occlusion of the vessels(Rodak ,1995). Haemostasis result from several interactive system designed to prevent or stop bleeding. Integral paths of the haemostasis include blood vessel platelets,coagulation and fibrinolysis. Coagulation involves a biological amplification system, Activator substances activate the clotting cascade which culminates in fibrinogen into fibrin that enmesh the platelets aggregate at injured site and converts it to stable fibrin-platelets plug (Hoff brand et al,1995).

MATERIALS AND METHOD

This comprises of 40 patients undergoing surgery given anaesthesia were studied at National Hospital Abuja Nigeria. The patients were analysed for PT, APTT according to Lewis and Decie 2001. The samples were obtained before commencement of anaesthesia, 1hr post, 24hrs post, 48hrs and 72hrs post surgery/anaesthesia respectively for 5days.

Sample collection

Whole blood was drawn with minimum stasis into 4.5ml citrate bottle via the antecubital vein using disporsable plastic syringe and needle. Each sample was then mixed gently thoroughly to ensure anticoagulation and prevent cell lysis and was centrifuged and the plasma separated into plain bottle.

LABORATORY ANALYSIS.

Procedure for One stage prothrombin time.

0.1ml of normal plasma was dispensed into a test tube and incubated at 37oc for 30sec and also the commercial calcium thromboplasma was incubated at the same condition. Then 0.1ml of calcium was added and then start stop watch immediately and the thromboplasma and the clotting time noted. The procedure was repeated with the patient's plasma in place of normal plasma respectively.

Procedure for Activated Partial Thromboplastin Time.

0.2ml of well mixed kaolin was pipette in a small glass tube ,0.1ml of plasma was then added ,it was mixed and incubate at 37oc for 2min(tilting the tube at intervals).0.1mls of 0.025mls cacl2 was then added and then start the stop watch immediately swirl to mix time taken for the formation of clot is noted and recorded. Each patient and control plasma was tested in duplicate(Decie and Lewis 1994).

Statistical Analysis of Data

The data generated were processed and analysed using a statistical software and summerised as Mean±SD,SEM, and compared using Mann Whitney U test for non- normally distributed data. The level of significance in the differences between the mean was inferred at P<0.05.

RESULT AND DISCUSSION

The mean±SD,SEM, of activated prothrombin time test in al patients show a sharp increase after 1hr p>0.05 of surgery but lowers gradually in 24hr and also the mean,SD,SEM, of prothrombin time in all patients rises drastically after 1hr p<0.05 and start decreasing on the 3rd day 24hrs P<0.001 tending toward normal.

TABLE 1. Showing Mean±SD,SEM of all Study Subjects

Parameters	**pre**	**1hr**	**24hr**	**48hr**	**72hr**
PT(sec)	17.3±0.92	19.0±0.95	17.8±1.09	17.2±0.79	19.1±1.63
APTT(sec)	38.5±1.82	42.6±1.75	41.4±2.04	40.2±1.80	38.7±1.70

TABLE 2. Sex Disstributed of Mean±SD,SEM of PT,APTT Among the Study subjects

Parametes	**pre**	**1hr**	**24hr**	**48hr**	**72hr**
PT(sec)	17.0±0.97	19.3±1.05	17.1±0.99	17.1±0.99	17.7±0.91
APT(Tsec)	39.7±2.1	44.9±1.18	41.1±1.85	41.1±1.89	**}male** 40.5±1.72
PT(sec)	15.9±0.69	17.3±1.059	16.4±0.76	15.9±0.67	15.6±0.47
APTT(sec)	40.9±2.92	44.8±2.90	44.7±1.84	41.7±1.81	**}female** 39.8±1.78

TABLE 3. Statistical comparisons of all parameters with the pre-values

Parameters	**pre**	**1hr**	**24hr**	**48hr**	**72hr**
PTsec	16.4±0.59	18.3±0.63	16.75±0.61	16.5±0.59	16.65±0.55
APTTsec	40.3±1.76	44.8±1.76	42.9±1.33	41.4±1.27	40.15±0.08

P=>0.05 significant

Discussion

Prothrombin time and activated thrombin time are among the most common orderd coagulation test, which measures extrinsic and intrinsic pathway of coagulation. As the fundamental assays of coagulation system, the principal clinical uses of these test include detection of coagulation inhibitors monitoring heparin anticoagulant therapy and coagulation factor relplacement therapy.

Our study shows that there were no significant difference at P>0.05 in the values of PT & APTT ,majority of the participant subjects show a considerable normal PT and APTT, though in some of the patient the haemostatic function could be assume to be normal during surgery, but a noticeable experimentally prolonged prothrombin time though not significant at 1hr post anaesthesia which culminate in a depleted FVII activity observed should be regarded as a potential hazard and should be regarded as critical period to avoid a possible bleeding episode, though this could be a function of haemorrhage.

The results show a sharp increase in prothrombin and activated prothrombin time which could be an indication of hereditary or acquired intrinsic factors deficiencies. Also the sex distribution of all study subjects show that among the male there was an increase at one hour compared to the pre-values analysis in both prothrombin time and activated partial thrombin time which is in agreement with Hassel et al 1989, but in began to go back to normal at 24hr,48hrs and 72hrs respectively, while the female counterpart show similar result which shows a sharp increase at 1hr and began to decrease steadily at 24hr,48hr and 72hr to the pre value, even though the male show a significant increase than the female counterpart, which may raise concern of a bleeding disorder, severe deficiencies of factor XII, however result in bleeding disorder of varying severity depending on the levels of individuals factors.

Male and female patients also recorded the same trends as in other cases considered. Therefore, there may be no sex variation in the haemostatic variables, we therefore recommends that this group of patients should be studied for a long duration to ascertain completely the haemostatic system.

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