ABSTRACT

Acute Myelocytic Leukemia (AML) is a cancer of the bone marrow characterized by arrested maturation along with uncontrolled proliferation of hematopoietic progenitor cells. Mostly, it affects persons of age 65years and above. In AML, there is absence or low amounts of Estrogen Receptors in the bone marrow. Various studies have associated Estradiol to the variation of ER. However, the exact role Estradiol is still not known in association with the onset and progression of AML. The main objective was to determine association of serum Estradiol levels and bone marrow Estrogen Receptor densities in AML patients attending Moi Teaching and Referral Hospital (MTRH) Kenya. The research was conducted atMTRH. A sample size of 17 case samples and 17 control samples was analysed. Bone marrow cell blocks from inpatients and outpatients were sectioned and stained for ER using anti-ER antibodies tagged with an orange dye for immunohistochemical analysis. ER percentages were arrived at by dividing the total number of ER-positive myelocytes by total number of myelocytes seen per field. Blood samples collected in plain tubes from the subjects and serum was collected. Estradiol was determined using competitive ELISA technique. The results showed ER densities (less or equal to 10%) in 12 out of 17 (70.6%) cases and 3 out of 17 (17.6%) controls. The mean percentage of Estrogen Receptors case samples was 7.65% and in control samples was 23.53%. The mean Estradiol concetration in case samples was found to be 128.94 pg/ml whereas in control samples was found to be 32.41pg/ml. The correlation of Estradiol and Estrogen Receptors in AML patients is -0.5952. In cases, the mean ER percentages for the males with AML was 8.89 while for females was 6.25. The control males had mean ER percentage of 50.44 while females had mean ER percentage of 12.125. Most of the cases were of the age between 25 and 31 which carried 41% of all the AML cases. The correlation of age and estrogen receptors is -0.262. In conclusion, the findings of this study that AML cases had very low estrogen receptor densities as compared to the non-AML control samples. Also, the Estradiol levels in cases samples were relatively high as compared to the control samples. Both in cases and controls, the higher the Estradiol the lower the ER. The two variables vary inversely. The study suggest that AML is associated with downregulation of ER in the bone marrow. It is therefore possible to adopt use of bone marrow ER and serum Estradiol as markers of AML.