INTRODUCTION *And* AIM OF THE WORK

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Human telomerase, a ribonucleoprotein polymerase, synthesizes telomere repeat sequences (TTAGGG), at chromosome termini that protect chromosomes from DNA degradation and illegitimate recombinations ***(Xu et al., 1998)***. Both telomerase and telomeres are believed to play important roles in the regulation of cellular ageing and in tumourigenesis ***(Harley et al., 1994)***. In general, telomerase is active only in human germline cells, certain stem cells, permanent human tumour derived cell lines and up to 90% of various cancer specimens, but not in most normal somatic cells ***(Shay, 1995)***.

Telomeric DNA is lost during each cell division due to inability of the lagging strand of DNA to fully replicate the end of linear chromosomes, referred to as the end replication problem ***(Levy et al., 1992)***. Telomerase which synthesize telomeric DNA onto the chromosomal ends is able to compensate for the loss of terminal telomeric DNA ***(Morin, 1989)***.

In normal human somatic cells, expressing low or undetectable telomerase, a progressive shortening of the telomeres is observed every time somatic cells divide both in vitro and in vivo due to the replication problem and contributing to replicative cell senescence ***(Wright and Shay, 1992)***. This telomeric shortening, in the absence of telomerase, acts

as a mitotic clock in determining the remaining replicative capacity of the cells ***(Shay et al., 1996).***

In contrast to somatic cells, germline cells maintain the length of telomere through an indefinite number of cell divisions by the expression of telomerase ***(Mantel and Greider, 1994).***

Telomere length and telomerase have an important role in normal and malignant haematopoiesis. Telomere erosion can lead to chromosome end fusion and thereby contribute to genomic instability during tumourigenesis ***(Engelhardt et al., 2003).***

Telomerase activity is detectable in many primary human tumour specimens and tumour derived cell lines ***(Hiyama et al., 1995a).*** Elevation of telomerase activity was first identified in ovarian carcinoma ***(Counter et al., 1994a)***, and has now been detected in more than a dozen of different tumour types including haematological malignancies ***(Kim et al., 1994).***

AML is characterized by an accumulation of immature leukaemic blast cells in bone marrow and peripheral blood of patients due to abnormal proliferation and blocked myeloid differentiation (***Sawyers et al., 1991)***.

In a study by ***Zhang et al., (1996)***, they found that AML patients with high levels of telomerase activity seemed less likely to achieve a

complete remission as compared to those having low levels. ***Tatematsu et al., (1996)*** observed a significantly higher telomerase activity in leukemic cells from four patients with relapsed AML than from 10 newly diagnosed cases.

The aim of the present study is to estimate the level of telomerase activity in AML patients and correlate it to the clinical and laboratory data.