Comet assay in myelodysplastic syndromes

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The comet assay (single-cell gel electrophoresis) has been established as a simple, rapid, flexible and sensitive method of detecting DNA damage in single cells[1,2]. Cells embedded in agarose on a microscope slide are lysed with detergent. Electrophoresis at high pH results in structures resembling comets, observed by fluorescence microscopy; the intensity of the comet tail relative to the head reflects DNA damage[2]. The lesion of each cell is quantified according to the comet tail length as class 0 (no tail) to 4 (almost all DNA in tail)[3]. Due to genetic instability of myelodysplastic syndromes, the comet assay can be useful to detect DNA lesion intensity and correlate this with cytogenetic abnormalities. Figure 1 illustrates a cell from a healthy 46-year-old control individual classified as comet class 0. Figures 2A - E illustrate cells from a 61-year-old patient with myelodysplastic syndrome (47, XY, +8) classified as comet class 0, 1 and 2.

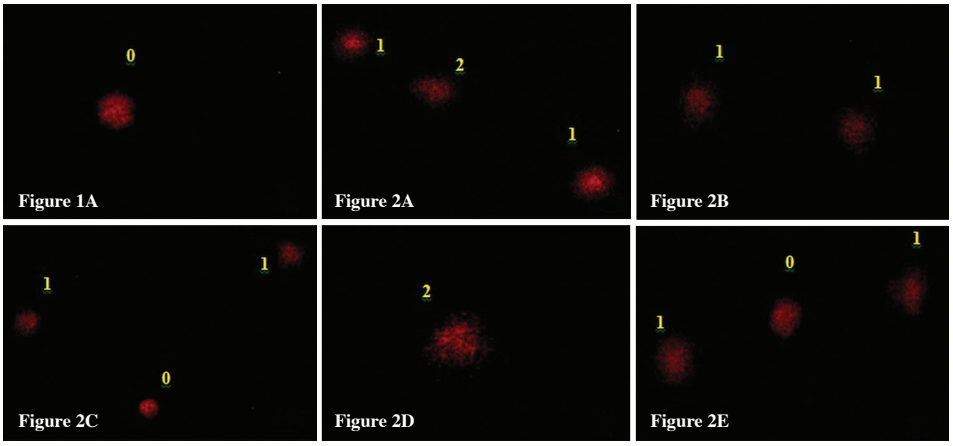

Figure 1 – Electrophoresis under alkaline conditions in low melting point agarose gel of the cells of a healthy control classified as comet Class 0.
Figures 2A – E – Electrophoresis under alkaline conditions in low melting point agarose gel of the cells of a myelodysplastic syndrome patient (47, XY, +8) classified as comet Class 0, 1 and 2.

References

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