Comet Assay as a technique to evaluate DNA damage in sickle cell anemia patients

Willian Marcel Barberino
Edis Belini-Junior
Claudia Regina Bonini-Domingos

Laboratory of Hemoglobin and Genetics of Hematological Diseases, Biology Department, Universidade Estadual Paulista "Júlio de Mesquita Filho" – UNESP, São José do Rio Preto, SP, Brazil

Comet Assay is a technique which can detect single-strand breaks as initial DNA damage.[1,2] Cells submitted to electrophoresis under alkaline conditions in low melting point agarose gel show DNA damage in a comet-like form when viewed at fluorescence microscopy. The lesion from each cell is quantified according to the comet tail length as class 0, 1, 2 or 3.[3] In sickle cell disease, due to constant oxidative stress and membrane lesions, this assay can be useful to detect DNA lesion intensity and medication response. Figure 1A illustrates cell nuclei from a 31-year-old sickle cell disease patient taking hydroxyurea classified as comet class 3. Figure 1B shows the result of a 33-year-old subject without any hemoglobinopathy where no lesions are observed.

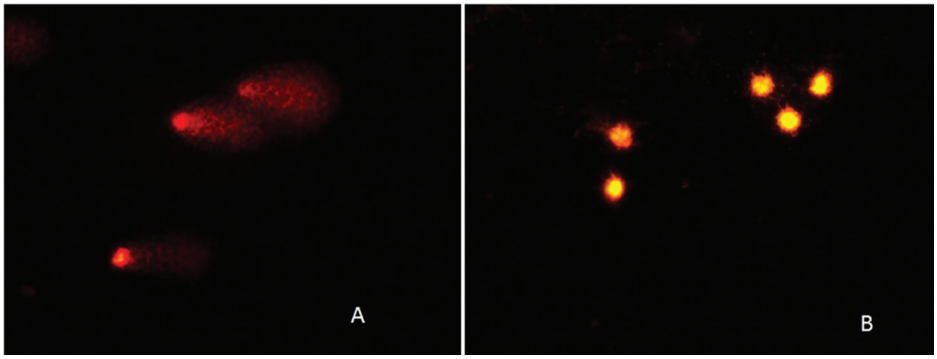

Figure 1A – Electrophoresis under alkaline conditions in low melting point agarose gel of the cells of a sickle cell disease patient with damage classified as Comet class 3
Figure 1B – Electrophoresis under alkaline conditions in low melting point agarose gel of the cells of a subject without any hemoglobinopathy and thus without DNA damage

References

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Corresponding author:
Willian Marcel Barberino
Departamento de Biologia,
Universidade Estadual Paulista
"Júlio de Mesquita Filho" – UNESP
Rua Cristóvão Colombo, 2265
Jd. Nazareth
15041-000 – São José do Rio Preto
SP, Brazil
biobarberino@gmail.com

www.rbhh.org or www.scielo.br/rbhh

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