Common European mitochondrial haplogroups in the risk of breast RT-induced fibrosis

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PURPOSE/OBJECTIVE

Germline polymorphisms in oxidative stress response genes have been postulated to be involved in the development of late normal tissue complications following radiotherapy. Despite the key role of mitochondria in the production of reactive oxygen species, the contribution of mitochondrial DNA variations to clinical radiosensitivity is still largely unknown. In the present study, we evaluated the association between mitochondrial DNA haplogroups and the risk of radiation-induced subcutaneous fibrosis after postoperative radiotherapy in breast cancer patients.

MATERIAL AND METHODS

- 286 pts affected by breast cancer
- treatment: conservative surgery and postoperative RT

RESULTS

The results were analysed by multivariate Cox regression analysis and Kaplan-Meier analysis. Haplogroup H was found associated with a lower risk of grade >2 fibrosis (P= 0.018).

CONCLUSION

Our results support a protective role of the mitochondrial haplogroup H in the development of radiation-induced fibrosis in breast cancer patients. Further prospective studies with larger sample size and different populations are nevertheless warranted to corroborate the possible influence of mitochondrial haplogroups on late normal tissue radiosensitivity.