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Generating Loco-Regional Heat Impact - Available Technologies: Their Specific Efficacy and Inherent Restrictions

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Introduction

Generally regarded the critical claim in hyperthermia is the ability to achieve a relevant heat impact in the region of interest. As opposed to surface heating it appears quite tricky to come up with valid predictions for a region of interest (ROI) located in the volume depth of a body.

Despite most encouraging results from recent clinical trials there exists still skepticism. One main argument is the difficult reproducibility of a desired temperature impact in the ROI - simultaneously the application should in clinical routine be practically feasible and affordable.

Objective

Focusing on non invasive hyperthermia technologies the discussion is led by the following issues

a) What are realistic claims in achievable temperature impact? Which restrictions do exist? Which safety mechanisms do exist?

b) What are the characteristics in clinical procedures and for the business concept of a supplying healthcare unit?

Discussion

Different available technologies are briefly presented and their technical characteristics are discussed. Focus will be on the non invasive methods of antenna systems and capacitive electro-hyperthermia. This will cover potential impact as well as specific restrictions.

Much work worldwide has been invested in trying to achieve quality procedures in terms of monitoring temperature in the ROI. Ideally this should be an equally non invasive mechanism. Available methods to this objective will be discussed with their specific benefits and restrictions.

Conclusion

To be as precise in application and monitoring a heat dose as individually desirable an immense effort (in time and in investment) is required. Some compromises seem acceptable in order to spread hyperthermia to a scalable supply for a population´s potential need. An awareness of realistic claims and restrictions of the various technologies is helpful in gaining realistic expectations and consecutively an acceptance among clinicians.