

## **REVIEW of RADIOTHERAPY FOR MORBUS DUPUYTREN & LEDDERHOSE**

Hans-Peter Rodemann, Tübingen & M. Heinrich Seegenschmiedt, Hamburg (Germany)

### **PURPOSE**

This paper will review the radiobiological basis and the historical development of the use of radiotherapy in treating Morbus Dupuytren and Morbus Ledderhose. It will demonstrate how initial phase 1 – 2 studies slowly developed into phase 3 clinical trials and today's treatment concept, and it will also explore areas still to be researched.

### **MATERIAL:**

First clinical proposals to treat Morbus Dupuytren with ionizing radiation started in the 40es of the last century. Initially large fractions of 8 – 10Gy applied every months over a period of several months wer used either with Radium sources or with low-energy X-ray equipment; thus, total doses similar to those used in cancer treatment, i.e. 40 - 60 Gy were applied. In the initial clinical studies no selection criteria were applied to indicate radiotherapy. No radiobiological research and rationale was defined. Thus, in some cases positive effects of radiotherapy were observed, while in other cases effects were only marginal or not existing. Typically for these initial study concepts and results were inconsistent selection criteria, and different stages of MD as well as different dose concepts and low numbers of patients treated. From a modern viewpoint the clinical outcome was insufficient with regard to statistics and long term follow-up.

An important step forward was the radiobiological discovery that RT is efficient in the early stage of MD, which is characterized by mitotic proliferation of fibroblasts and myofibroblasts. Clinical studies focussing on these early stages of MD including stages with nodules and cords and minor function deficit showed in long-term follow-up, that with each step of clinical progress radiotherapy becomes less anless efficient.

### **RESULTS:**

The final proof for the effectiveness of RT has been a long term controlled phase 3 study including a control group and two radiotherapy groups (21 and 30 Gy). Design, conduct and results of this study will be discussed in detail. Finally, detailed biological mechanisms have been discovered which help to understand long-term stabilisation achieved by radiotherapy. In addition to Morbus Dupuytren, similar effective clinical trials have been performed for Morbus Ledderhose.

Despite concerns regarding acute and chronic side effects of radiotherapy, no severe effects have been observed and salvage operation was possible without increased perioperative toxicity. Mild effects, like skin dryness, have been sen, but no damage of blood vessels, or changes in the radiated tissue that might render later surgery impossible. Moreover, no secondary cancer has been observed or reported. All other concerns will be addressed.

### **CONCLUSION:**

A global standard of treatment sequence and its documentation is required. A proposal will be made to standardize clinical examination and findings for better comparison of clinical data. Further research is necessary to create an interdisciplinary research and clinical database.

