Did You Know?

Radiation-Induced Soft Tissue Sarcoma (RIS)

Abstract

Radiation-induced soft tissue sarcomas (RIS) are rare clinical cases. Their incidence is increasing in relation to the increase of the survival of patients treated with radiotherapy.

Radiation-induced sarcoma is a well-known complication of radiation therapy (RT), with a reported incidence of ~4% of all sarcomas (Ref.1).

Radiation-induced sarcomas can originate in either the irradiated bone or soft tissues. The most common histologic subtypes are malignant fibrous histiocytoma (MFH) and osteosarcoma. RIS has a poor prognosis compared to primary sarcomas: the 5-year survival rates vary from 17% to 58% in RIS compared with 54–76% in patients with sporadic sarcomas.

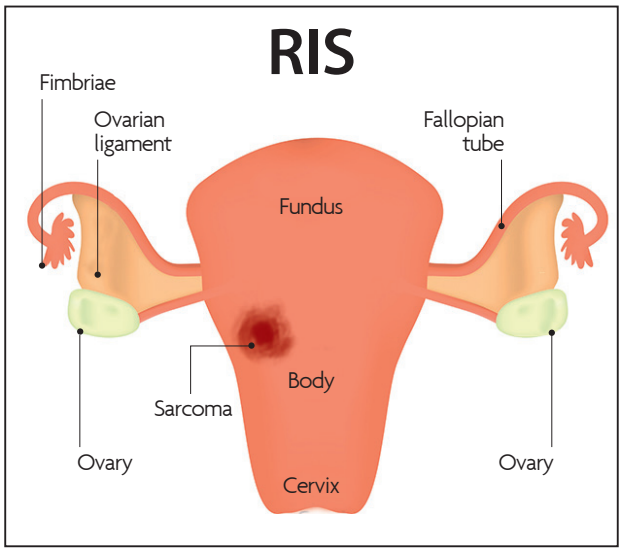

Figure 1

Besides exposure to RT, risk factors include genetic predisposition, exposure to chemotherapy, and for certain types of soft tissue sarcoma, chronic edema, and viral infection.

Tumor size and grade are the two most important prognostic factors for soft tissue sarcomas, including those associated with radiation therapy.

Complications

- Pain
- Adjacent organ invasion
- Death

Possible treatments

- Surgery
- Radiotherapy
- Chemotherapy

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Olea Vision™ makes DWI and T2 morphological image fusion straightforward which facilitates the visualization of anatomical structures between the tumor and the surrounding organs (Figure 2).

The IVIM module and synthetic B computation generate even more diffusion-weighted new images that allow a sharp differentiation of the necrosis as well as the tissue component of the lesion (Figure 3).

It is also possible to segment radiation-induced sarcoma in order to estimate its volume and follow its post-treatment evolution over each patient follow-up exam (Figure 4).

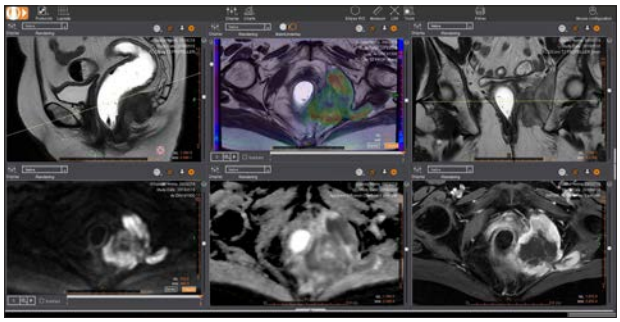

Figure 2

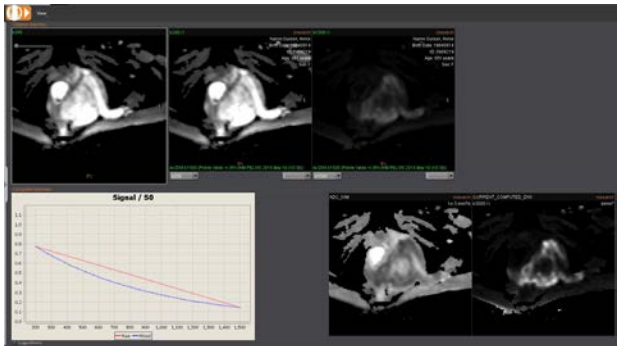

Figure 3

Addition

The Texture analysis could give additional information related specifically to the tumor structural organization. This would allow a better efficiency of the post-treatment evaluation (Figure 5).

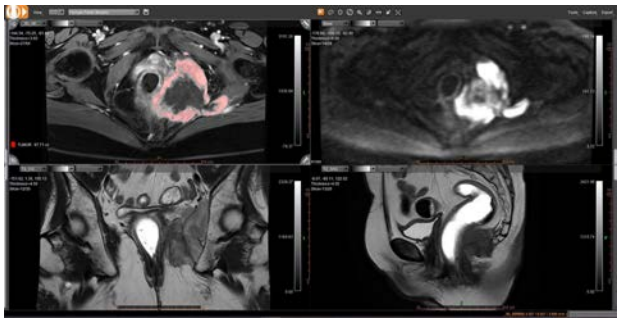

Figure 4

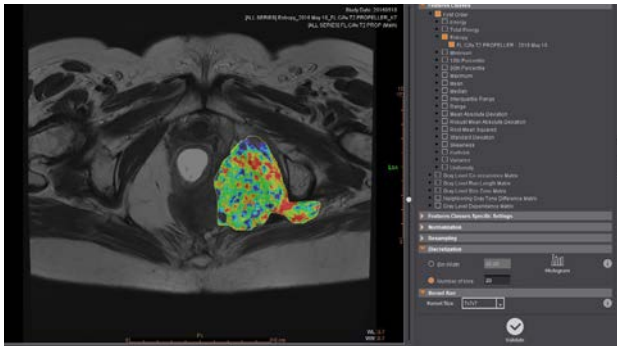

Figure 5

References

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