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Title **Hadrontherapy in the Treatment of Cancer**

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Aim

To review published reviews of hadron (proton and light ion) therapy indications and its clinical efficacy.

Conclusions and results

Of the 370 publications identified, 12 were included (9 general reviews on cancer and 3 reviews on a specific cancer). Most of the studies included in the reviews analyzed the efficacy of proton therapy rather than ion therapy, and most of these studies were retrospective case series.

Clinical results suggested that the best dose distribution characterizing proton therapy could be translated into clinical benefits for uveal melanoma, skull base chordomas, and chondrosarcomas.

Better results than conventional radiotherapy have been also suggested in several prospective case series and a nonrandomized clinical trial of patients with adenoid cystic carcinoma treated with ion radiotherapy.

Firm conclusions about the efficacy of hadron therapy cannot be drawn because of significant methodological gaps in the evidence. The clinical performance of hadron therapy should be appropriately assessed. In the meantime, available data suggest than in some low-frequency tumors the benefits of hadron therapy could be significant.

Methods

We conducted a systematic review of review reports. Most of the important databases were systematically searched. Reviews on clinical results of hadron therapy for oncological patients were included.

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