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Letter to the editor

Comment on Long-term risks of secondary cancer for various whole and partial breast irradiation techniques



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Nienke Hoekstra et al., recently have published (Long-term risks of secondary cancer for various whole and partial breast irradiation techniques) paper in Radiotherapy and Oncology journal, Volume 128, Issue 3, Pages 428–433. The aim of this study was to evaluate secondary cancer for organs at risk that were placed partially in and out of field. The authors for measuring of LAR, used BEIR VII model. This model was basically used for organs that received low dose (below 1 Gy) [1]. Based on the same paper, it's clear that organs like thyroid and contralateral breast and lung received a low dose but ipsilateral lung received a higher dose, about several Gy [2,3]. In a nominated paper, authors reported mean dose for lungs, this can be the reason of the low lung dose. BEIR VII model won't be appropriate for high dose. Received dose for organs in field is inhomogeneously distributed, for changing inhomogeneously distributed dose to a homogeneous dose, the concept of organ equivalent dose (OED) has been applied. The OED was calculated using the Schneider paper, this model considered repair cells after radiotherapy, dose fractionation, dose–response curve, etc. For estimation of secondary cancer risk of organs that receive high dose and are usually placed in treatment field, we should use this model [4].

The first shortcoming of this paper comes from not reporting lung dose as contralateral and ipsilateral lung dose though they

know there is an impressive difference between both lung doses. Another shortcoming comes from using BEIR VII Model instead of OED model for organs in field (especially Ipsilateral lung) that received high dose.

It should be noted that studies on estimation of secondary cancer risk after radiotherapy of breast cancer used OED model [2,3,5]. I hope that my comments help better understand the usage of an appropriate model for the evaluation of secondary cancer risk.

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