

Adding gender to therapy: the emerging need for gender-based studies for treatment optimisation in oncology.

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Aim: Ample evidence has accumulated over the past decades to justify gender-tailored therapies for cancer management. While most of this evidence originates from animal research, there are clinical studies highlighting gender-based differences in response both in terms of tumour control and adverse events. Despite the above evidence, gender medicine remains under-researched in oncology.

Methods: This work presents the results of the limited number of studies that assessed outcome differences between males and females after radio/chemo or immunotherapy.

Results: Current dose prescriptions in radiotherapy do not take into account the difference in radiosensitivity between genders, although studies demonstrated variations in outcome (progression-free survival, toxicity) for a number of cancers [1]. Chemotherapy is a key constituent of cancer therapy, with an arsenal of available drugs, each inducing its own organ-related toxicity. For instance, cisplatin-based studies showed that women are more susceptible to gastrointestinal side effects, while ototoxicity and cardiac events are more prominent among men [2]. In immunotherapy for melanoma, the female sex was associated with poor response to immune checkpoint inhibitors. The adaptive immune system being dependent on the circadian rhythm, chronotherapy studies showed the critical role of immunotherapy timing in females vs males for optimal outcome. Thus, a recent trial showed that administration of immunotherapy before 4.30pm in female patients drastically increased their 5-year overall survival (47% vs 92%), while in males showed no significant difference [3].

Conclusion: Variations in treatment response between males and females exists and they require clinical intervention. The latest trend is towards the inclusion of gender as a variable in clinical research, as shown by newly designed trials that intend to analyse their data considering gender as a matched variable.

References:

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