Patient-reported late effects of single fraction total body irradiation for non-malignant haematological disease transplant conditioning

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Abstract

Introduction: Patients with severe complications of non-malignant haematological disease are considered as candidates for curative treatment with an allogenic bone marrow transplant (ABMT). A non-myeloablative conditioning regimen is used; consisting of an alkylating agent and single fraction total body irradiation (SFTBI) at a dose of 2-4.5 Gy (dose rate 150mu/min). This is distinct from high dose fractionated total body irradiation (TBI) used in a myeloablative conditioning regimen; for which the late effects are well documented. There is however no dedicated study on the late effects associated with low dose SFTBI. Methods: We undertook a single institution study focusing on patient reported outcomes after SFTBI (January 2003 – January 2019) delivered more than 1-year previously, prior to an AMBT in patients aged under 16-years for non-malignant haematological conditions. A 19-point questionnaire was conducted with study subjects over the phone. The primary outcome was late effects as reported by patients. Secondary outcomes were patient demographics. Results: Fifty patients were screened, 31 were invited to take part and 24 consented to participate. Pulmonary toxicity was the most common visceral effect reported (5 patients), followed by kidney (3) and cardiac (2). No patients reported cataracts, diabetes or secondary malignancy. Two patients were on sex hormone replacement although no evidence of female menstrual delay was demonstrated. The majority (21) were enrolled in mainstream schools. Conclusion: Late effects do occur after SFTBI, but are mild and occur less frequently compared to high dose TBI. The consent process with children/parents prior to SFTBI should reflect this.

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`Table 1_ PBC.docx` available at https://authorea.com/users/425844/articles/530556-patient-reported-late-effects-of-single-fraction-total-body-irradiation-for-non-malignant-haematological-disease-transplant-conditioning

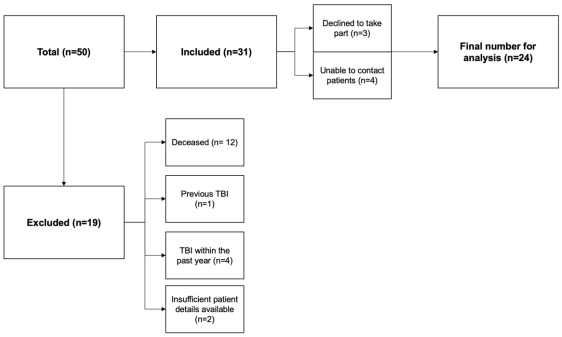

Figure 1: Consort diagram showing the number and reasons for including and excluding patients in the study.

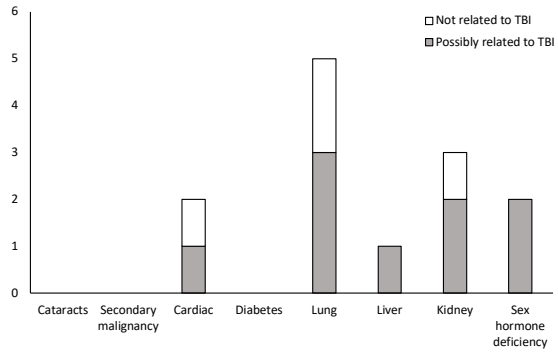

Figure 2: Incidence by patient number of reported late effects