MALIGNANCY AND CHROMOSOME INSTABILITY SYNDROMES

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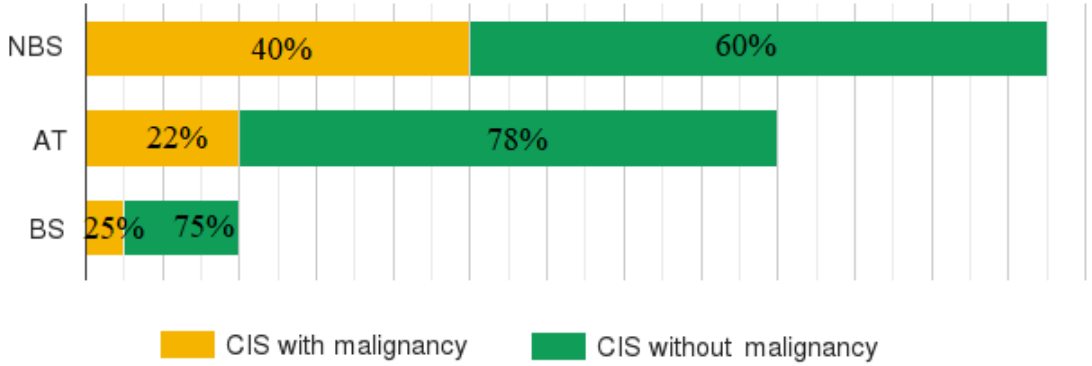
BACKGROUND AND AIMS

Ataxia telangiectasia (A-T), Nijmegen breakage syndrome (NBS) and Bloom syndrome (BS) are a group of recessively inherited conditions associated with defects in DNA repair mechanisms that lead to chromosomal instability, chromosomal breakage and an array of phenotypic consequences, including an increased risk of developing malignancies.

METHODS

We report the incidence of malignancy among 47 patients with chromosome instability syndromes (CIS), diagnosed from 1990 until 2022 in Belarus.

Fig 1. Proportion of patients with NBS, A-T and BS with malignancy



CONCLUSIONS

Our results show that 31.9% of patients with CIS developed a malignancy. Hematological malignancies were prevalent (14/15, 93%). The study group is characterized by the predominance of T-cell neoplasms.

RESULTS

15/47 (31.9%) patients developed a malignancy in the age of 1-21 years with median of 8 years. Underlying diagnosis in 15 affected patients was NBS (n=10), A-T (n=4), BS (n=1). Ten patients with NBS developed T-cell lymphoblastic lymphoma (T-LBL) (n=2), peripheral T-cell lymphoma, unspecified (PTCL-US) (n=1), anaplastic large cell lymphoma (ALCL) (n=1), diffuse large B-cell lymphoma (DLBCL) (n=2), T-cell acute lymphoblastic leukemia (T-ALL) (n=2), mixed-phenotype acute leukemia (MPAL) (n=1), acute undifferentiated leukemia (AUL) (n=1).

Four patients with A-T developed T-ALL (n=2), non-determined subtype of lymphoma (n=1), optic nerve glioma (n=1). A patient with BS was diagnosed with ALCL. In the group of patients wh o did not receive HSCT, two patients survived (13%) and malignancy was the main cause of death (7 – NBS, 1 – A-T, 1 – BS). Outcome for three NBS patients who received allogeneic HSCT was good, median follow up of 5.8 years. One patient with A-T lost to follow-up.

	NBS (n=10)	AT (n=4)	BS (n=1)
Age (year) Median (LQ, UQ)	7.9 (1.2, 21.8)	6.6 (2.7, 18.1)	15.10
Sex	3 F 7 M	2 F 2 M	1 M
Malignancies	DLBCL (2) T-LBL (cortical) (1) T-LBL (mature CD8+) (1) PTCL-US (1) ALCL (1) T-ALL (2) MPAL (1) AUL (1)	pre–T-cell ALL (1) cortical T-cell ALL (1) non-determined subtype of lymphoma (1) optic nerve glioma (1)	ALCL, ALK-negative

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