

A PILOT STUDY ON TUMOR STAGING ON POPULATION-BASED DATA IN A MIDDLE-INCOME COUNTRY USING THE TORONTO STAGE GUIDELINES

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BACKGROUND

Childhood cancer represents a small percentage among cancer burden therefore population-based data is less known especially among low-middle-income countries. Most population-based cancer registries (PBCRs) hold incomplete data on tumor stage for childhood cancers. No population data in low-middle income countries exist to support that advanced stage at diagnosis is higher.

OBJECTIVE

To conduct a pilot study in Brazil testing the use of the Toronto Childhood Cancer staging System by PBCRs.

METHODS

Four PBCRs were selected: Aracaju, Belo Horizonte, Curitiba and Cuiaba with database from 2005 to 2014. Data collection included demographic variables, information on examinations for the diagnosis, cancer site and morphology codified by ICD-O3. Absolute and relative frequencies were performed.

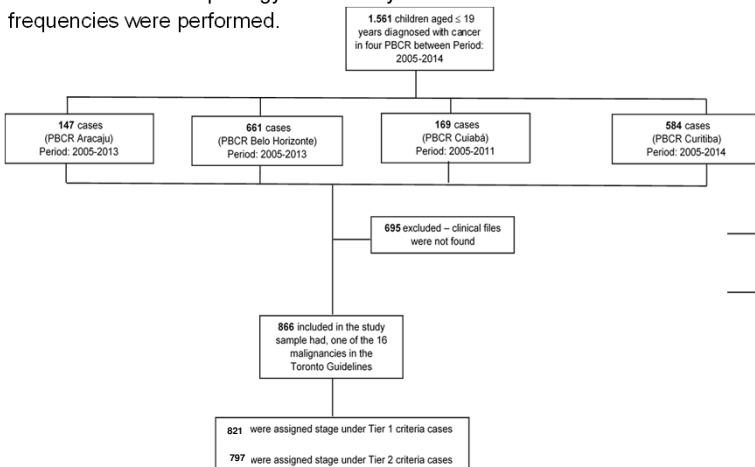


Figure 1. Flow diagram of casuistic selection

CONCLUSIONS

Stage of disease represents a major prognostic variable and varies among pediatric oncology institutions according to treatment protocol used. It is extremely necessary to have a uniform tool to compare international staging and survival. This pilot study demonstrates that the Toronto guidelines are feasible in a middle-income country as Brazil. This is the first population-based data with standard staging system.

RESULTS

It was possible to retrieve 866 cases to perform stage. The most frequent age group was 0 to 9 years with 467 (53.9%) cases; male sex was more frequent with 479 (55.3%) cases. 821 (94.8%) had sufficient information in the medical records to apply the stage according to Tier 1 criteria and 797 (92.0%) according to Tier 2 criteria. The most common types of cancers in the study were Acute lymphoblastic leukemia (30.5%); Hodgkin's lymphoma (10.6%); non-Hodgkin lymphoma (9.6%) and acute myeloid leukemia (8.4%). 77.7% of cases had localized or regional disease at diagnosis, 14.3% were diagnosed with metastatic cancer and 8.0% were not possible to perform staging.

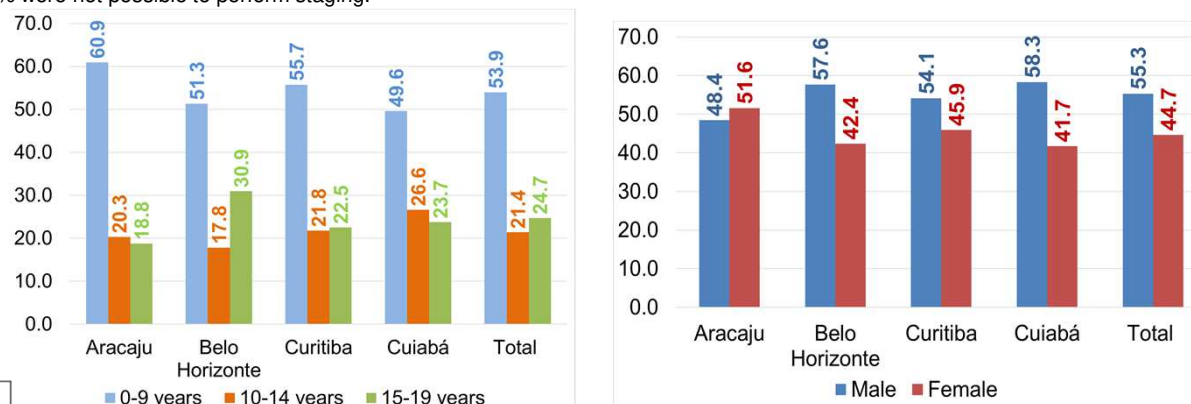


Figure 2. Characteristics of the study cohort by age and sex.

Table 1. Cases of childhood cancer that could be staged according to Tier 1 and Tier 2 criteria of the Toronto Guidelines.

Tumor type	Tier 1		Tier 2		Tier 1		Tier 2		Tier 1		Tier 2		Tier 1		Tier 2		Tier 1		Tier 2		Total n
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%			
	Aracaju				Belo horizonte				Curitiba				Cuiabá				All				
Acute lymphoblastic leukemia	22	88.0	19	76.0	52	92.9	51	91.1	128	99.2	121	93.8	50	92.6	50	92.6	252	95.5	241	91.3	264
Acute myeloide leukemia	2	100.0	2	100.0	17	73.9	17	73.9	38	100.0	38	100.0	9	90.0	9	90.0	66	90.4	66	90.4	73
Hodgkin lymphoma	5	71.4	5	71.4	22	91.7	22	91.7	43	95.6	43	95.6	9	81.8	9	81.8	79	90.8	79	90.8	87
Non-Hodgkin lymphoma	8	100.0	8	100.0	30	85.7	30	85.7	32	100.0	31	96.9	11	84.6	10	76.9	81	92.0	79	89.8	88
Neuroblastoma	5	100.0	5	100.0	13	100.0	13	100.0	24	100.0	24	100.0	4	100.0	4	100.0	46	100.0	46	100.0	46
Wilms tumor	5	100.0	5	100.0	12	92.3	12	92.3	23	100.0	23	100.0	8	100.0	7	87.5	48	98.0	47	95.9	49
Rhabdomyosarcoma	4	100.0	4	100.0	6	85.7	6	85.7	17	100.0	17	100.0	5	71.4	5	71.4	32	91.4	32	91.4	35
Non-rhadomyosarcoma soft tissue sarcoma	0	0.0	0	0.0	5	100.0	4	80.0	10	100.0	9	90.0	4	100.0	3	75.0	19	95.0	16	80.0	20
Osteosarcoma	0	0.0	0	0.0	11	100.0	11	100.0	23	100.0	23	100.0	5	83.3	5	83.3	39	97.5	39	97.5	40
Ewing sarcoma	1	50.0	1	50.0	12	100.0	12	100.0	22	100.0	22	100.0	4	66.7	4	66.7	39	92.9	39	92.9	42
Retinoblastoma	1	100.0	0	0.0	9	100.0	8	88.9	10	100.0	10	100.0	0	0.0	0	0.0	20	100.0	18	90.0	20
Hepatoblastoma	1	50.0	1	50.0	3	75.0	3	75.0	3	100.0	3	100.0	1	100.0	1	100.0	8	80.0	8	80.0	10
Testicular germ cell tumor	0	0.0	0	0.0	6	100.0	6	100.0	17	100.0	17	100.0	3	100.0	3	100.0	26	100.0	26	100.0	26
Ovarian germ cell tumor	1	100.0	1	100.0	6	100.0	6	100.0	3	100.0	3	100.0	5	100.0	5	100.0	15	100.0	15	100.0	15
Medulloblastoma	1	100.0	1	100.0	12	100.0	11	91.7	21	100.0	19	90.5	5	100.0	5	100.0	39	100.0	36	92.3	39
Ependymoma	0	0.0	0	0.0	0	0.0	0	0.0	10	100.0	10	100.0	2	100.0	0	0.0	12	100.0	10	83.3	12
Total	56	87.5	52	81.3	216	91.5	212	89.8	424	99.3	413	96.7	125	89.9	120	86.3	821	94.8	797	92.0	866

Sources: Brazilian Population-Based Cancer Registries

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