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THE ASSOCIATION OF HLA-B*5801 GENOTYPE AND SKIN REACTIONS AMONG PEDIATRIC PATIENTS DIAGNOSED WITH HEMATOLOGIC DISEASES AND CANCERS RECEIVING ALLOPURINOL

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Introduction

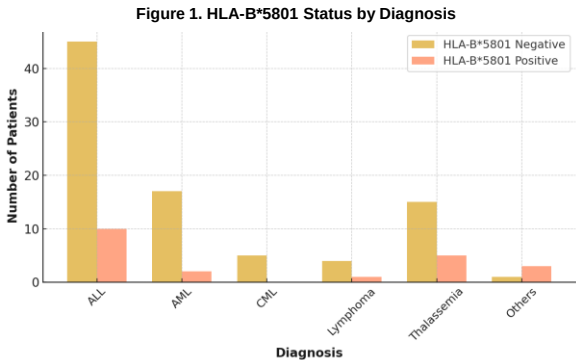
Allopurinol is an effective and commonly used medication for preventing hyperuricemia in tumor lysis syndrome. However, it can cause severe cutaneous adverse reactions (SCARs), which are associated with a high mortality rate. A major risk factor for SCARs is the HLA-B*5801 genotype. Information in pediatric hematology and oncology patients with the HLA-B*5801 genotype remains scarce.

Objectives

To evaluate the association between HLA-B*5801 and cutaneous adverse reactions and to determine the prevalence of the HLA-B*5801 genotype in pediatric hematology and oncology patients.

Methods

This cross-sectional study included pediatric patients (Birth-18 years old) diagnosed with hematologic or oncologic diseases who received allopurinol. HLA-B*5801 genotyping was performed to assess its association with cutaneous adverse reactions.



ALL, Acute lymphoblastic leukemia; AML, Acute myeloid leukemia; CML, Chronic myeloid leukemia.

Results

- A total of 108 pediatric patients, with 19 (17.6%) testing positive for HLA-B*5801.
- The majority of patients (86.1%) were prescribed allopurinol for tumor lysis syndrome prophylaxis.
- The median duration of allopurinol exposure was 5 days (range: 1-19 days)
- Only 1 patient, who was HLA-B*5801 negative, developed maculopapular rashes.
- None of the HLA-B*5801-positive patients experiences skin reactions.
- Association of HLA-B*5801 and diagnosis of patients is showed in Figure 1 and baseline characteristics of study cohort and HLA-B*5801 is showed in Table 1.

Table 1. Baseline Characteristics and HLA-B*5801 HLA-B*5801 Genotypic Distribution

Characteristics	Total (n=108)	Number (%)	
		HLA-B*5801 negative (n=89)	HLA-B*5801 positive (n=19)
Sex:			
Male*	68 (63.0)	57 (64.0)	11 (57.9)
Female*	40 (37.0)	32 (36.0)	8 (42.1)
Age (years)*	9.3 ± 4.7	9.24 ± 4.80	9.36 ± 4.09
BSA*	1.09 ± 0.43	1.12 ± 0.45	0.98 ± 0.30
Allopurinol use for tumor lysis syndrome			
Dose (mg/day)*	271.5 ± 132.2	278.64 ± 138.26	237.89 ± 94.54
Dose (mg/m ² /day)*	247.1 ± 59.5	248.92 ± 60.03	238.36 ± 57.64
Duration exposure (day)®	5 (4.8)	5 (4.8)	5 (4.8)
Indication of allopurinol			
Treatment	15 (13.9)	14 (15.7)	1 (5.3)
Prophylaxis	93 (86.1)	75 (84.3)	18 (94.7)
Side effects*			
No	107 (99.1)	88 (98.9)	19 (100.0)
MP rash	1 (0.9)	1 (1.1)	0 (0.0)
Treatment of patient during on allopurinol®			
Chemotherapy	75 (69.4)	62 (69.7)	13 (68.4)
Conditioning regimen of BMT	33 (30.6)	27 (30.3)	6 (31.6)

* Number n(%); * Mean ± SD; ® Median (P₂₅, P₇₅); BMT, Bone marrow transplantation.

Conclusions

The short duration of allopurinol exposure likely contributed to the rarity of cutaneous adverse reactions, regardless of HLA-B*5801 status. Routine HLA-B*5801 testing may not be necessary before initiating allopurinol in pediatric hematology and oncology patients with brief exposure durations.

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