Hematuria is a frequent finding on routine urinalysis in pediatric patients with hemophilia

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Topic: Hemophilia-clinical

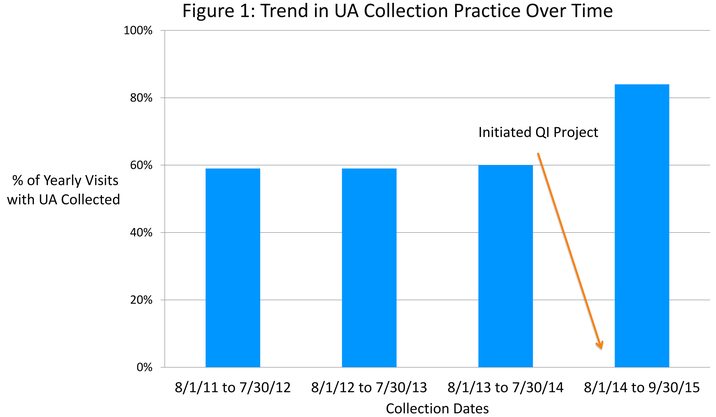
Background

- Hematuria is a recognized complication of hemophilia A and B (HA, HB)[1,2] and adult patients with hemophilia have a higher prevalence of renal disease than that of the general population. [3]
- There is limited literature regarding the prevalence of renal disease in the pediatric hemophilia population. Additionally there are no data correlating hematuria with subsequent kidney disease. [4]
- Because there are no national guidelines on screening for hematuria, practice patterns vary between Hemophilia Treatment Centers (HTC). A QI project at our pediatric HTC sought to increase the frequency of screening urinalyses (UAs) at annual comprehensive visits, identify the prevalence of hematuria in our patients, and explore for associations in those with hematuria.

Methods

- Eligibility: All males ≥ age 2 seen at one pediatric HTC with HA or HB
- Collected all UA results from 8/1/2011 to 9/30/2015
- Hematuria was defined as ≥3 red blood cells (RBCs) on at least one UA
- Demographic information, patient comorbidities and existing imaging results were tabulated
- Univariate logistic regression evaluated association of hematuria with age, race, type and severity of hemophilia, treatment regimen and inhibitor history. *p*-values less than 0.05 were considered significant

Figure 1: Trend in UA Collection Practice Over Time



Total Patients		93
Hemophilia A	Mild	12
	Moderate	17
	Severe	38
	Total	67
Hemophilia B	Mild	3
	Moderate	16
	Severe	7
	Total	26
Age in Years	Median (Range) 12	(2 - 35)
Race	African-American	9
	Asian	1
	Bi-racial	1
	Caucasian	82
Treatment Regimen	On-Demand	45
	Prophylaxis	48
Inhibitor History	None	85
	Tolerized	6
	Active	2

Comorbidities: HIV and Hepatitis C (in same patient), acute kidney injury and α-thalassemia carrier (in same patient), spastic quadriplegia, Ehlers-Danlos syndrome, hypertension, and platelet dysfunction.

Table 2: Univariate Logistic Regression Analyses of Patient Characteristics and Hematuria

Variable		Odds Ratio (95% CI)	*p*-value
Age		1.104 (1.023, 1.192)	*0.0106*
Diagnosis	HA	*Reference*	-
	HB	0.25 (0.09,0.70)	*0.0086*
Severity	Mild	*Reference*	-
	Moderate	2.3 (0.6, 8.7)	0.2230
	Severe	3.0 (0.83, 10.82)	0.0931
Treatment Regimen	Episodic	*Reference*	-
	Continuous	1.69 (0.75,3.84)	0.2090

Results

- 93 patients age 2 to 35 years (median 12 years) met eligibility criteria
- 60% of patients had screening UAs prior to QI project, whereas 80% were screened afterwards
- 43/93 (46%) were identified as having hematuria (median RBCs 7)
- 37/67 (55%) with HA and 6/26 (23%) with HB had hematuria
- 76% of cases with hematuria were identified during annual screening while the remainder were diagnosed due to gross hematuria
- 22/43 (51%) had recurrent episodes of hematuria
- Older age and HA were associated with an increased likelihood of hematuria
- Existing imaging in 24 patients with hematuria showed the following abnormalities:
  - Renal calculi (3 patients)
  - Minor pelviectasis (1 patient)
  - Congenital dysplastic left kidney, ureterocele, and right hydroureter (1 patient)

Discussion

- The prevalence of hematuria and recurrent hematuria was high in this pediatric population
- Older age and diagnosis of HA were associated with the presence of hematuria
- Abnormal imaging was noted in a limited number of patients with hematuria
- Hematuria is a largely uninvestigated issue in the hemophilia population and little is known about its correlation with renal disease later in life
- Limitations included small patient population and retrospective study design
- Screening UAs could be considered as part of routine hemophilia care; yet, additional longitudinal investigation is needed to determine the prevalence of hematuria in other HTCs, and to determine whether this finding is sufficiently predictive of future renal disease to justify the addition of routine UAs for pediatric patients with HA or HB.

References

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