

An evaluation of whether the ankle is now the dominant site of chronic hemophilic arthropathy in young adults with severe hemophilia

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Background:

- Most young adults with severe hemophilia in Canada have been exposed to prophylaxis.
- They are expected to have better overall joint outcomes than age-comparable peers have had in the past.
- Anecdotally, chronic hemophilic arthropathy of the ankles remains prevalent among young adults.

Objectives:

- To compare the prevalence of ankle, elbow and knee chronic hemophilic arthropathy in young adults, 18-28 years of age to older adults.

Methods:

- Number and type of joints with chronic hemophilic arthropathy was extracted from the clinic record for Canadian subjects with severe (FVIII or FIX $\leq 2\%$) hemophilia A or B from 7 centres.
- The proportion of subjects with chronic arthropathy was compared between older (≥ 40 years of age), intermediate (29-39 years), and young (18-28 years) individuals.
- Logistic regression analysis was used to compare the likelihood of having joint arthropathy between age groups and the analysis was adjusted for the effects of covariates such as body weight, type of hemophilia, baseline factor activity, and duration of prior prophylaxis exposure (% lifetime).

Conclusions:

- In this cohort, ankle arthropathy was observed in 42-52% of all adults with severe hemophilia and is the dominant site of hemophilic arthropathy in young adults. The odds of ankle arthropathy across the age spectrum were similar and a higher proportion of knee and elbow arthropathy was observed in the older age group. In the model, duration of lifetime exposure to prophylaxis did not seem to independently diminish the odds of arthropathy of any joint.
- This finding is consistent with pediatric reports that the ankle is the most common site of bleeding for those on prophylaxis¹ and reducing the rate of ankle bleeding in children and young adults on prophylaxis is a priority.

Table 1. Characteristics of severe hemophilia population

	All ages (n=287)	18-28 yrs (n=114)	29-39 yrs (n=85)	≥ 40 yrs (n=88)	p-value
Age (yrs)	32 (24;43)	23 (21;26)	34 (31;37)	48 (44;53)	--
% Hemophilia A/B	77/23	83/17	78/22	68/32	--
Inhibitor [§]	46 (16%)	12 (11%)	13 (15%)	21 (24%)	--
HIV	82 (29%)	8 (7%)	38 (45%)	36 (41%)	--
HCV Ab +	180 (63%)	37 (32%)	71 (84%)	72 (82%)	--
Prior prophylaxis?	177 (63)	92 (82%)	51 (61%)	34 (40%)	<0.001
1 [†] proph exposure	3%	9%	0%	0%	
% of lifetime [†]		90 (79;99)	(n=0)	(n=0)	
2 [†] proph exposure	57%	72%	58%	36%	<0.001
% of lifetime [†]		29 (9;67)	15 (6;26)	3.6 (1;26)	<0.001

Values expressed as Median (IQR 25;75) or Number (%)
[§] Historical or Current
[†] duration of prophylaxis exposure data missing for 23 subjects

Results:

- 287 subjects were included in the analysis.
- As expected, prior prophylaxis exposure differed between the 3 age groups with higher % lifetime exposure in younger age groups (Table 1)
- The overall prevalence of **ankle**, elbow and knee arthropathy was **47%**, 43% and 33% respectively but there was no significant difference in the odds of ankle arthropathy between the 3 age groups, unlike for elbow and knee (Table 2).
- However, none of the patient nor hemophilia related factors, including prophylaxis exposure were predictive of arthropathy of any joint with the exception of hemophilia B being predictive of less knee arthropathy (OR 0.31; 95% CI 0.14-0.71) than A.

Table 2. Patterns of hemophilic arthropathy among age groups

	Ankle			Knee			Elbow		
	%	OR	p	%	OR	p	%	OR	p
18-28 years	42	--	--	15	--	--	34	--	--
29-39 years	47	1.0 (0.5;2.1)	NS	32	3 (1.3;7.0)	<0.01	39	1.2 (0.6;2.3)	NS
≥ 40 years	52	1.6 (0.8;3.3)	NS	57	9.4 (3.9;23)	<0.01	57	2.7 (1.3;5.7)	<0.01

