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Incidence of joint damage in von Willebrand disease

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Recurrent joint bleeds and development of chronic joint disease is a major concern in patients with bleeding disorders. In his original paper E.A. von Willebrand reported joint bleeds as one of the clinical features of von Willebrand disease (VWD).[1] However, little attention is usually paid to joint bleeds and chronic joint disease in VWD in textbooks on bleeding disorders. Most physicians would probably say that patients with VWD seldom need orthopedic surgery because of hemophilic arthropathy. This notion is underscored by our own experience.

At Rikshospitalet University Hospital, in which all elective surgery in patients with bleeding disorders in Norway is performed, 132 invasive orthopaedic procedures were performed during a 7 year period from 1997 to 2004. Only three of these procedures were performed in patients with VWD, and only one procedure was performed because of hemophilic arthropathy (a type 3 VWD patient).

To properly address the incidence of joint bleeds and joint damage in VWD disease we did a Medline search. We also took advantage of the Universal Data Collection Program (UDC) developed by Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA. US Hemophilia Treatment Centers have enrolled patients with bleeding disorders in UDC since May 1998. CDC has published several reports on patients with bleeding disorders, and some UDC data are publically available at the CDC website.

Results

We identified only three studies providing a full description of the clinical phenotype in VWD patients.[2-4] The study by Federici et al4 was the only study which accounted for the clinical phenoptype according to the different VWD subtypes. Table 1 shows the relative frequency of joint bleeding reported from these three specialized centres. The Italian data has been updated recently,[5] and it is the updated results that are provided in Table 1. Apart from joint bleeding, the different types of bleeding are strikingly similar for the different subtypes of VWD. Joint bleeding is primarily a clinical feature of type 3 VWD.

According to UDC a joint bleed was the first bleed in 3.6% of females with type 3 VWD.[6] Patients with type 3 VWD reported 1.9±4.9 (mean±SD) bleeding episodes during the 6 months period prior to enrolment in UDC.[7] The figures for type 1 and type 2 VWD were 0.2 (1.2) and 0.2 (1.6), respectively.

The UDC has collected data addressing the development of chronic joint disease in VWD, and some of these data are shown in Tables 2 and 3. According to the UDC criteria, a target joint is defined as a joint in which recurrent bleeding has occurred in four or more occasions during the previous 6 months or one joint in which 20 life-time bleeding episodes have occurred. Like the three studies cited previously, the UDC data underscores that joint bleeding and development of chronic joint disease are features of type 3 VWD.

However there seems to be a small number of patients with type 1 and type 2 VWD who experience recurrent joint bleeds and develop chronic joint disease. Gender and race do not have any impact on joint disease in VWD.[6,7]

Conclusions

Recurrent joint bleeding and development of chronic joint disease are predominantly seen in type 3 VWD patients; 37-45% of these patients will suffer one or more joint bleeds during their life time, 15% will develop chronic joint disease and 7-8% will undergo an invasive orthopaedic

Table 1. Incidence (%) of bleeding symptoms in patients with VWD and in normal persons (adapted from Silwer[2], Lak *et al.*[3] and Castaman *et al.*)[5]

	Type 1 (n=168)	*Italian Type 2 (n=550)*	*Type 3 (n=66)*	*Iranian Type 3 (n=348)*	*Scandinavian VWD (n=264)*	*Normals (n=500)*
Epistaxis	61	63	66	77	62	5
Menorrhagia	32	32	56	69	60	25
Post-extraction bleeding	31	39	53	70	51	5
Hematomas	13	14	33	n.r.	49	12
Bleeding form minor wounds	31	35	56	n.r.	36	0.2
Gum bleeding	31	35	56	n.r.	35	7
Post-surgical bleeding	20	23	41	41	28	1
Post-partum bleeding	17	18	26	15	23	19
Gastrointestinal bleeding	5	8	20	20	14	1
Joint bleeding	3	4	45	37	8	0
Hematuria	2	5	12	1	7	1
Cerebral bleeding	1	2	9	n.r.	n.r.	0

n.r.: not reported.

Table 2. Joint damage and equivalents according to type of VWD.

	Type 1 N (%)	*Type 2 N (%)*	*Type 3 N (%)*
Number of patients	2209	339	219
At least one target joint	37 (1.7)	7 (2.1)	33 (15.1)
At least one invasive procedure	30 (1.4)	3 (0.9)	16 (7.3)
Used any walking aid	126 (5.7)	18 (5.3)	41 (18.7)
Used wheelchair	39 (1.8)	10 (2.9)	13 (5.9)

Table 3. Incidence (%) of target joint according to age and race.

	Age group in years			
	2-5 N (%)	*6-12 N (%)*	*13-18 N (%)*	*19+ N (%)*
Number of patients	250	815	365	1304
Target joint	5 (2.0) White	8 (1.0) Black	9 (2.6) Hispanic	53 (4.1) Asian
Number of patients	2307	199	365	81
Target joint	72 (3.1)	5 (2.5)	5 (1.4)	1 (1.2)

procedure. There seems to be a few patients with type 1 and type 2 VWD in which chronic joint disease develops. At present, there is no data, clinical or laboratory, available to help characterizing these patients.

References

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