Contaminated sharps injuries: A survey among dermatology residents

To the Editor: Dermatology residents are exposed to sharp instruments daily, and sharps injuries risk exposure to bloodborne pathogens. The reliability of data on dermatologic sharps injury is affected by under-reporting rates that range from 36.6% to 56%.[1-3] No studies have examined contaminated sharps injuries (CSIs), which are the injuries that result in exposure to bodily fluids, and postexposure screening for dermatology residents.

The University of Missouri institutional review board deemed the study exempt. An anonymous Research Electronic Data Capture survey was sent to the Association of Professors of Dermatology on February 2, 2018, and closed on March 28, 2018. Members were asked to forward the survey to their dermatology trainees. To encourage participation, an optional raffle for three $50 gift cards was offered. Research Electronic Data Capture data were exported to Excel software (Microsoft Corporation, Redmond, WA), and logistic regression analysis (significance level of alpha = 0.05) was performed with SAS software (version 9.4, SAS Institute, Inc, Cary, NC).

A total of 115 dermatology trainees responded, with 65% having experienced at least 1 CSI during their residency training. Suture needle was the most frequent cause (Table I). In all, 33.3% of injured respondents did not report their injury. The most common barrier to reporting was a feeling that overall risk of infection transmission was low (n = 20) (Table II).

Resident screening for bloodborne pathogens occurred in at most 75.5% of reported injuries (Table II). The 3 respondents who were exposed to HIV, hepatitis B virus (HBV), or hepatitis C virus (HCV) did not seroconvert. Paradoxically, there was a significant association between trainees who had formal training in proper disposal of hollow-bore needles (odds ratio, 2.949; 95% confidence interval, 1.022-8.509; $P = .0454$) and removal and disposal of surgical blades (odds ratio, 2.701; 95% confidence interval, 1.002-7.775; $P = .0496$) with a higher likelihood of experiencing a CSI. This relationship may indicate that formal training correlates with a more comfortable injury reporting environment and may not be due to poorly instructed skills.

Under-reporting of injuries is frequent among dermatologists (33.3%-64%), and barriers to reporting commonly include thinking that the patient was a low-risk patient, the fact that the injury was minor, and the time needed to report the injury.[1,2] A contaminated needlestick injury has a 0.3% and 1.8% to 3% risk of transmission of HIV and HCV, respectively, and a 31% risk of HBV conversion, depending on the patient's serologic status.[3,4] With

Table I. Characteristics of respondents, injuries, safety equipment, and formal sharps training

Characteristic	Residents n	Residents %
Training year		
PGY-2	38	33
PGY-3	37	32
PGY-4	37	32
PGY-5	3	3
No. of CSIs per respondent (N = 115)		
1	46	40
2	19	15.6
3	9	7.8
4	1	0.9
Total experiencing a CSI	75	65
Instrument causing the injury* (n = 75)		
Suture needle	49	
Hollow-bore needle	20	
Skin hook	10	
Surgical blade during excision	7	
Shave biopsy blade	3	
Surgical blade during paring	2	
Surgical blade during I&D	1	
Curette	1	
Scissors	0	
Other	3	
Individual holding instrument at time of injury* (n = 75)		
Self	64	
Attending	8	
Nurse	0	
Medical student	0	
Other	4	
Personal protective equipment at institution (n = 114†)		
Gloves	114	100
Safe blade removal or blade-covering tool	68	59.6
Safe needle capping tool	58	50.9
Magnetic needle holders	14	12.3
Formal training in sharps handling (n = 114†)		
Scalpel technique	102	89.5
Injection technique for local anesthesia	99	86.8
Technique to handle a suture needle	99	86.8
Proper disposal of suture needles	99	86.8
How to remove and dispose of surgical blades	97	85.1
Disposal of hollow-bore needles	83	72.8
Skin hook technique	82	71.9
None of the aforementioned	6	5.3

CSI, Contaminated sharps injury; *I&D*, incision and drainage; *PGY*, postgraduate year.
*Some respondents had multiple injuries.
†One respondent did not reply.

Table II. Characteristics of CSI reporting and postexposure screening

Characteristic	Residents (n = 75)	
	n	%
Did you always report your sharps injury?*		
Yes	49	65.3
No	25	33.3
No response	1	1.3
Exposed to HCV, HIV, or HBV		
Yes	3	4
No	64	85
Unsure	5	7
No response	3	4
Barriers to reporting injury		
Believed that the overall risk of infectious disease transmission was low	20	
Fear of embarrassment	14	
Not enough time	10	
Knew that the patient was HCV/HBV/HIV negative	9	
Told not to report by an attending	4	
Fear of punitive response	4	
Unaware of reporting procedure	1	
Told not to report by staff	0	
Other	8	
Screening that occurred after always reporting (n = 49)		
Patient was screened	44	89.8
Resident was screened for HIV	37	75.5
Resident was screened for HCV	37	75.5
Resident was screened for HBV or immune	31	63.2

CSI, Contaminated sharps injury; *HBV*, hepatitis B virus; *HCV*, hepatitis C virus.
*There were no significant associations between reporting a CSI and class size (n = 74 [$P = .6131$]), geographic region ($P = .2704$), year in training ($P = .7639$), and sex ($P = .4606$).

low rates of disease transmission and frequent HBV immunization, some may think that the barriers to reporting a CSI outweigh the benefit; however, HIV postexposure prophylaxis has been associated with a 0% conversion rate.[5] Surprisingly, at most 75.5% of those who reported their CSI were screened for bloodborne pathogens, though variation in testing protocols may exist. Recommendations exist on how to manage and screen sharps injuries in dermatology.[3] The lack of reporting and the variability in postexposure screening puts dermatology residents at unnecessary risk of acquiring bloodborne pathogens following a CSI. The study's limitations include the small sample size and the potential for recall bias. There is opportunity for theoretical over-representation, both by individuals with a CSI and by those without a CSI.

In summary, utilization of devices to prevent sharps injury and formal training in sharps handling, which can vary in methodology, may need to be re-evaluated. Policies concerning postexposure screening may also need to be re-examined with a goal of improving the rate of screening after a CSI.

Kimberly M. Ken, MD, and Nicholas J. Golda, MD

From the Department of Dermatology, University of Missouri, Columbia, Missouri

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Reprint requests: Kimberly Ken, MD, One Hospital Dr, Room MA111, Columbia, MO 65212

E-mail: kenkm@health.missouri.edu

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A randomized double-blind placebo-controlled trial of autologous platelet-rich plasma intradermal injections for the treatment of vulvar lichen sclerosus

To the Editor: We performed a randomized, double-blind, placebo-controlled trial to evaluate the efficacy and safety of autologous platelet-rich plasma (PRP) for the treatment of vulvar lichen sclerosus (LS). A total of 30 patients (mean age, 52.6 years; 29 whites and 1 Hispanic) with biopsy-proven active LS were recruited. One participant withdrew after randomization but before treatment, and 29 completed the study. Patients were randomized to receive either placebo (saline injections) (10 subjects) or 2 separate treatments of PRP separated by 6 weeks (20 subjects). There was no statistically significant difference in participant age or duration of symptoms between the PRP and placebo groups. Each treatment consisted of 5 mL of PRP injected subdermally and intradermally, infiltrating the areas affected by LS. The PRP was prepared by using a US Food and Drug Administration–cleared centrifuge that uses a laser to isolate the platelet-rich fraction of 60 mL of whole blood (Magellan Autologous Platelet Separator System, Isto Biologics, Hopkinton, MA). The PRP was collected in a blackened syringe so that neither the physician administering the PRP nor the study participants knew whether they were receiving the PRP or placebo. The primary efficacy variable was determined by a pathologist with expertise in vulvar pathology (D.H.), who was blinded to the treatment arms and evaluated the inflammatory infiltration on the pretreatment and post-treatment biopsy specimens (on a 0-3 scale). A secondary end point was change in score according to the Clinical Scoring System for Vulvar Lichen Sclerosus (CSS), which is a validated instrument that assesses both the investigator and patient impression of the severity of the LS.[1] Of the 19 women receiving PRP, 5 had improvement in histopathologic inflammation between the pretest and post-test treatment biopsies, 10 had no change, and 4 had more inflammation. Of the 10 women receiving placebo, 5 had improvement, 4 had no change, and 1 had more inflammation (Mann-Whitney U test result, 109.0 [$P = .542$]). The mean difference in the CSS patient domain between the initial and final visits was −7.74 for patients receiving PRP and −9.44 for patients receiving placebo (Mann-Whitney U test result, 80.50 [$P = .654$]. Bruising was the only adverse event reported.

A recent pilot study performed by our group showed that PRP reduced histopathologic inflammation in 7 of 12 patients with vulvar LS.[2] However, the main limitations of that study was its lack of placebo control. In addition, Tedesco et al studied PRP injection in 31 patients with LS.[3] They reported that 62% of patients had improvement in their LS, but their study was not placebo controlled, did not use validated measures of subjective or objective improvement, and did not include histopathologic evaluation. As LS is a premalignant condition and a reduction in inflammation with optimal use of corticosteroids lowers the rate of malignant transformation, it is essential that all studies of LS use reduction in inflammation as the primary efficacy measure.[4] One of the strengths of our current study is that it used this objective criterion as its primary end point. Additional strengths of our study are that it was blinded, was placebo-controlled, and used the validated CSS. A sample size calculation was performed before initiation of the study and determined that our study sample was powered to show a clinically significant effect of a 50% reduction in inflammation with a 2-sided significance of .05 and a power of 0.8. In conclusion, until further well-designed controlled studies with appropriate end points show positive results, the negative results of this study suggest that autologous PRP does not adequately treat vulvar LS.

Andrew T. Goldstein, MD,[a,b] Leia Mitchell, MS,[a] Vaishnavi Govind, MS,[a] and Debra Heller, MD[c,d]

From the Center for Vulvovaginal Disorders, Washington, DC[a]; Department of Obstetrics and Gynecology, George Washington University School of Medicine and Health Sciences[b]; and Department of Pathology and Laboratory Medicine[c] and Department of Obstetrics, Gynecology, and Women's Health, Rutgers New Jersey Medical School, Newark, New Jersey[d]