

# Efficacy and Safety of Point-Of-Care Ultrasound-Guided Intra-Articular Corticosteroid Joint Injections in Patients with Hemophilic Arthropathy

Emily Martin<sup>1</sup>, Esther Cooke<sup>1,2</sup>, Arnold Ceponis<sup>3</sup>, Richard Barnes<sup>1</sup>, Colleen Moran<sup>1</sup>, Sally Holle<sup>1</sup>, Tudor Hughes<sup>4</sup>, Randy Moore<sup>5</sup>, Annette von Drygalski<sup>1,2</sup>  
<sup>1</sup>University of California, San Diego (UCSD), Department of Medicine, Division of Hematology/Oncology; <sup>2</sup>The Scripps Research Institute, Department of Molecular and Experimental Medicine; <sup>3</sup>UCSD, Department of Medicine, Division of Rheumatology, Allergy, and Immunology; <sup>4</sup>UCSD, Department of Radiology, UCSD; <sup>5</sup>General Musculoskeletal Imaging Inc.



## Introduction

- Hemophilic arthropathy is a major cause of morbidity among patients with hemophilia
- Intra-articular corticosteroids are widely used to treat joint pain in patients with other arthritic conditions
- However, intra-articular administration of corticosteroids in hemophilic arthropathy is rare
- Reasons may be reservations to advance needles into complicated joints

## Objectives

- To evaluate the efficacy and safety of ultrasound-guided corticosteroid injections for pain relief in patients with hemophilic arthropathy

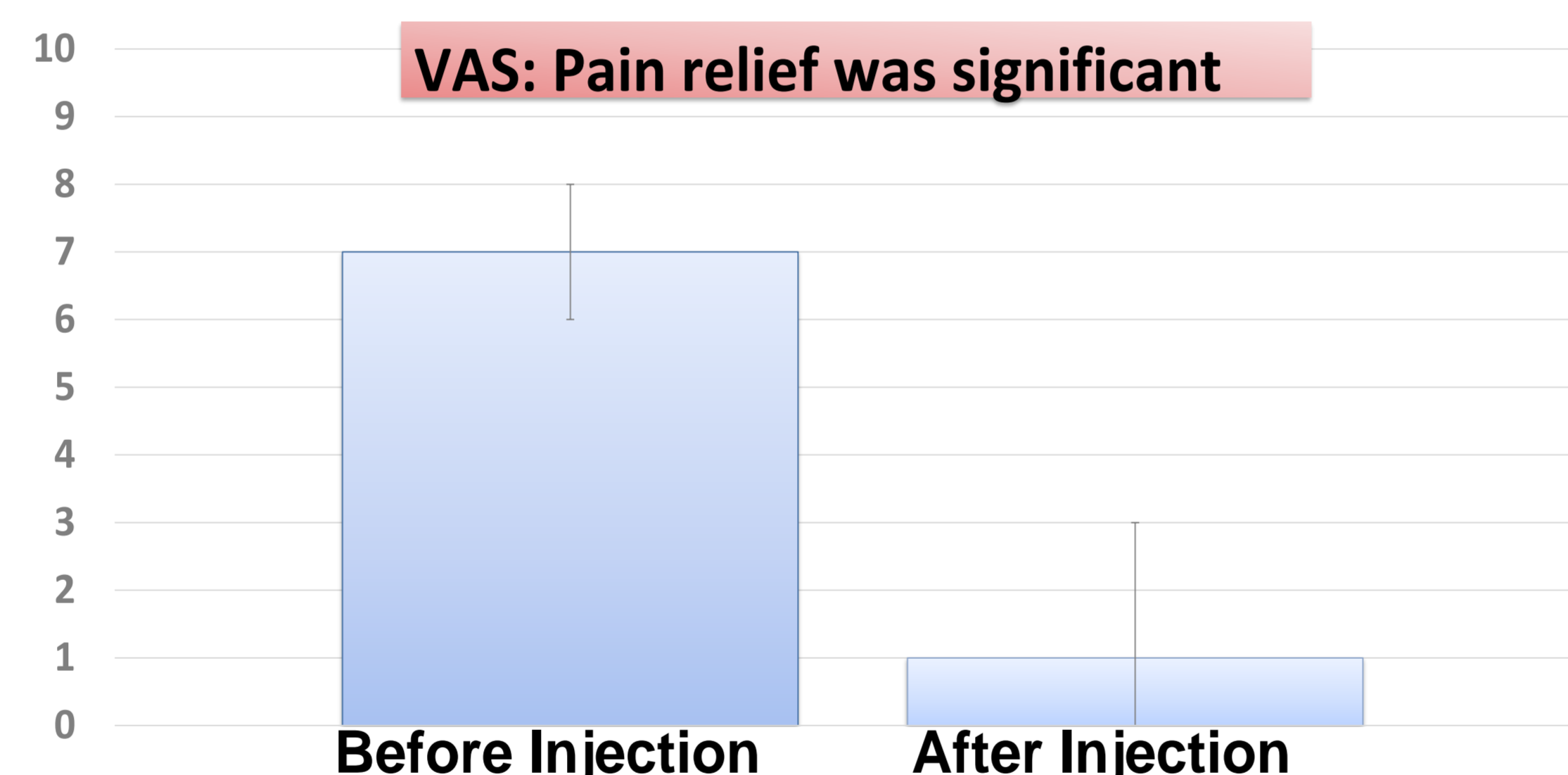
## Methods

- All ultrasound-guided intra-articular injections in patients with hemophilia performed at the Hemophilia or Rheumatology Clinics at UCSD between 03/2012 and 02/2016 were analyzed
- Needle placement and injection (40 mg Triamcinolone admixed with 3-5 mL Lidocaine 1%) were performed while patients underwent musculoskeletal ultrasound and Power Doppler examination
- Data collection included:
  - Patient demographics
  - Hemophilia- and joint-specific parameters
  - Presence of tissue hypervascularity, effusions
  - Time to onset of pain relief
  - Extent and duration of pain relief
  - Procedure-associated complications
- Statistical analysis to evaluate potential predictor variables on outcomes

## Patient Characteristics

Variables	Number of Patients
Median Age in Years (IQR)	38.7 (32.4 – 54.1)
Hemophilia Type	
A	20 ( 80%)
B	5 (20%)
Hemophilia Severity	
Mild	6 (24%)
Moderate	2 (8%)
Severe	17 (68%)
Inhibitor	
Present	1 (4%)
Absent	24 (96%)
≥ 2 Injections	
Into the same joint	9 (38%)
Into different joints	6 (24%)

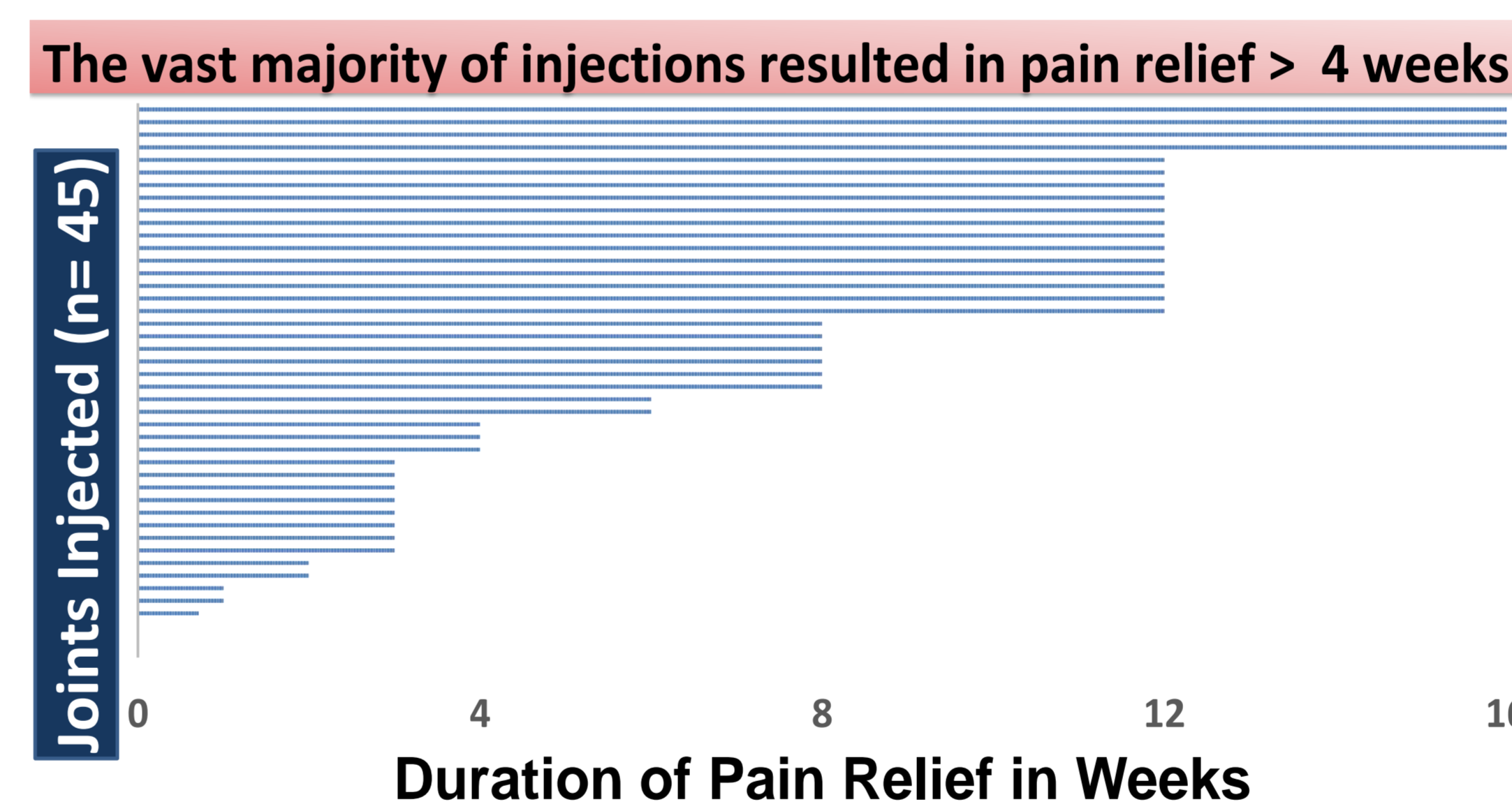
## Extent of Pain Relief



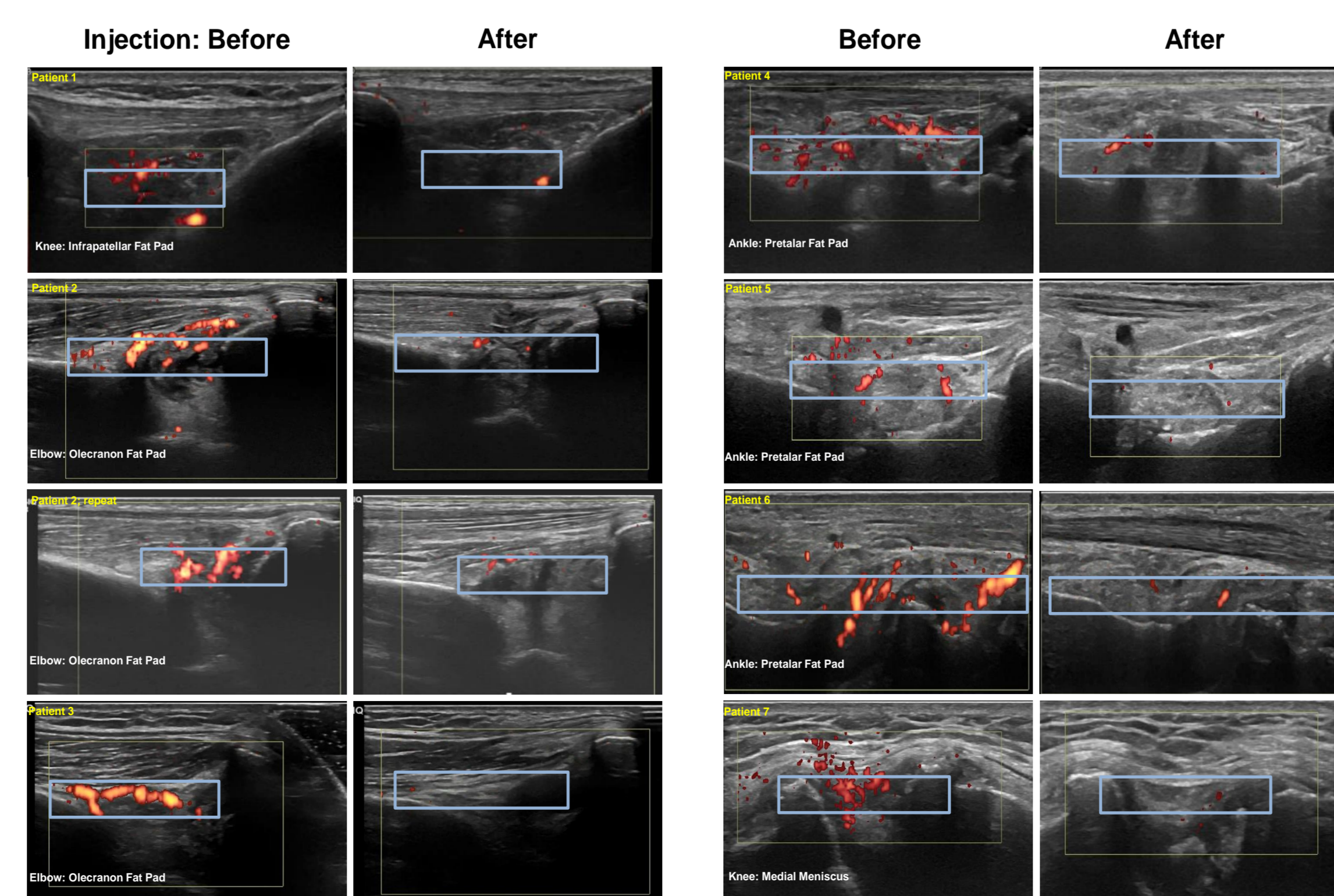
## Joint Characteristics

Variables	Number of Patients
Type of Joint	
Ankle	14 (31%)
Knee	18 (40%)
Elbow	13 (29%)
Pettersson Score (Single Joint)	
Median (IQR)	9.5 (7.0-11.0)
HJHS (Single Joint)	
Median (IQR)	7.0 (3.0-10.0)
Power Doppler Signal on MSKUS	
Present	40 (91%)
Absent	4 (9%)
Joint Effusion on MSKUS	
Present	17 (39%)
Absent	27 (61%)

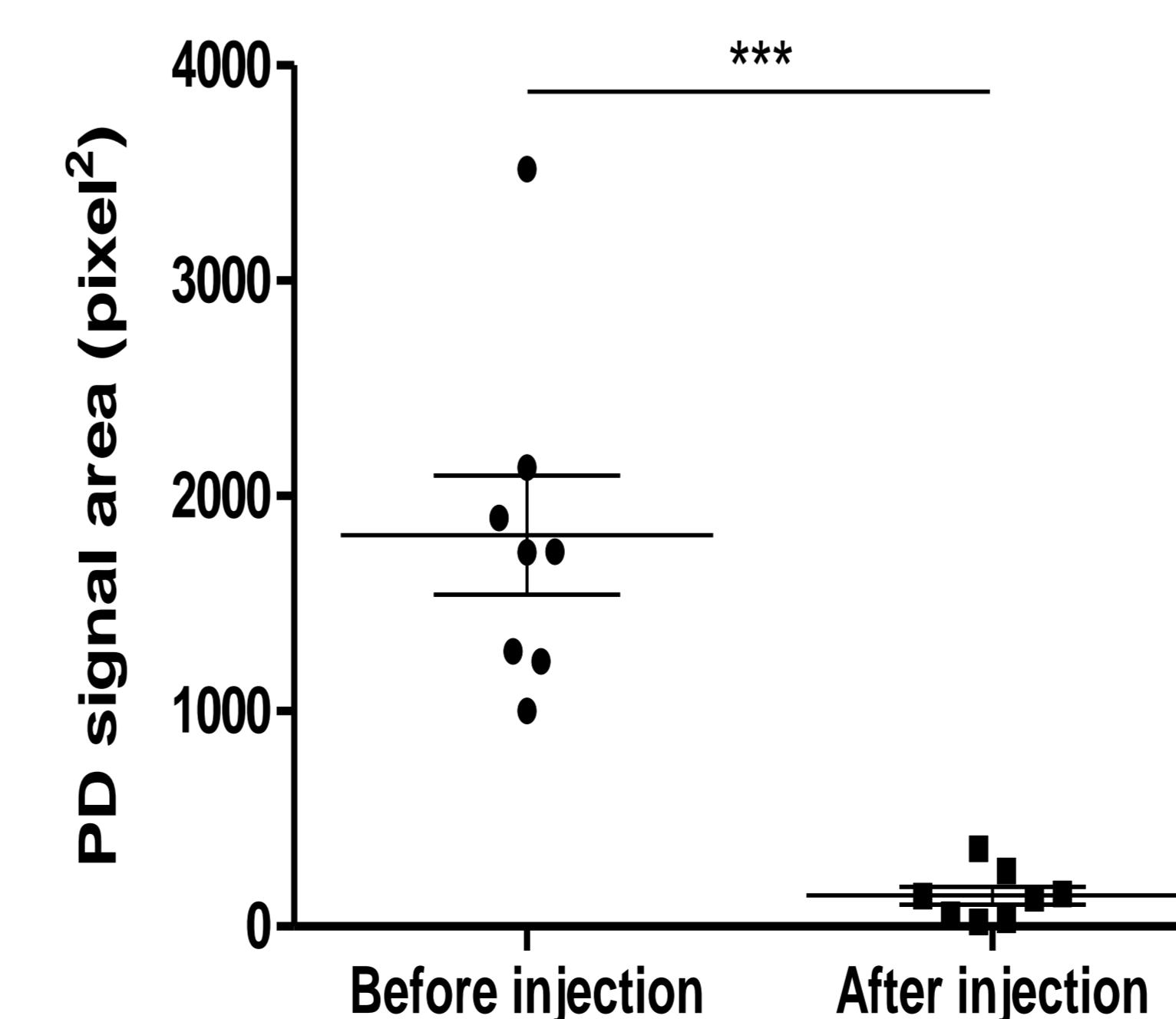
## Duration of Pain Relief



## Reduction in Vascularity in Response to Intra-Articular Steroids



## Reduction in vascularity was significant



## Summary

- Pain relief:**
  - Reported after 91% of injections
  - Occurred within 48 hr in the majority of patients
  - Lasted for 8 weeks (median duration)
- There were no reports of increased pain or procedure-associated complications
- Of the variables assessed, only joint Pettersson score and hemophilia type were associated with absolute and duration of pain relief
- Repeat MSKUS/PD after injection showed resolution of hypervascularity

## Conclusions

- Point-of-care ultrasound enabled intra-articular corticosteroid injections that were effective and safe for pain relief in hemophilic arthropathy and appeared to ablate soft tissue inflammation
- Intra-articular corticosteroid should be considered for pain management of hemophilic arthropathy

## Select References

- Wyseure T, et al. Advances and Challenges in Hemophilic Arthropathy. *Semin Hematol.* 2016 Jan;53(1):10-9. doi: 10.1053/j.
- Bhat V, et al. Vascular remodeling underlies rebleeding in hemophilic arthropathy. *Am J Hematol* 2015; 90: 1027-35
- Kidder W, et al. Persistent vascular remodeling and leakiness are important components of the pathobiology of re-bleeding in hemophilic joints: Two informative cases. *Microcirculation* 2016
- W Kidder, et al. Point-of-care musculoskeletal ultrasound is critical for the diagnosis of hemarthroses, inflammation and soft tissue abnormalities in adult patients with painful hemophilic arthropathy. *Haemophilia.* 2015 Jul;21(4):530-7. doi: 10.1111/hae.12637

## Acknowledgements

This study was supported by Biogen (A.v.D.), by a career development award from the National Hemophilia Foundation/Novo Nordisk (A.v.D) and by Human Resource and Service Grant H30MC24045