



WFH MSK CONGRESS 2021

Bianca Da Silva

This year MSK 2021, the **17th WFH (World Federation of Hemophilia) International Musculoskeletal (MSK) Congress**, was presented in a virtual format. It featured a combination of educational sessions, free paper abstract submission and interactive workshops, focusing on the most current up to date knowledge on musculoskeletal approaches to bleeding disorders from experts all over the world and over 600 participants from 83 countries. There were 2-3 sessions per day over a 5 day period, with diverse start times, allowing attendees to participate in as many sessions as possible!

Topics discussed throughout the Congress included Scoring Systems, Physiotherapy, Surgery: Pre and Post, and Replacement Surgery: Tips and Tricks. The four workshops focused on clinical assessment, ultrasound, manual therapy and clinical cases.

SCORING SYSTEMS

Some of my personal highlights were the presentations about scoring systems and assessment tools.

Scoring Systems explored the frequently used assessment tools for haemophilia patients. This included the haemophilia joint health score, patient's participation and activity scoring systems, x-ray, MRI, ultrasound, 3D motion analysis, and pre- and post-surgical assessments.

The **Haemophilia Joint Health Score (HJHS)** is the most common scoring system used in Australia. This is a validated outcome tool that assesses 9 items (including swelling, muscle wasting, crepitus, movement loss, joint pain and strength) in 6 target joints (elbows, knees and ankles).

Interesting concepts discussed during this session included the current use of ultrasound in the identification of an acute bleed, and the future possibility that a patient with haemophilia could perform this assessment with an ultrasound device in the convenience of their own home via telehealth with their treating Haemophilia Treatment Centre. There were also discussions regarding how in the future

artificial intelligence could interpret results or identify changes by comparing previous images.

Current research indicates that **T2 mapping MRI** is a reliable technique for assessing changes of cartilage fibres over time. This is a type of MRI that is able to identify early changes in cartilage. It does this by detecting disarrangement in water molecules and collagen fibres. This would allow for an earlier and more preventative approach to joint degeneration and arthritis. Further research is required to determine whether T2 mapping can significantly predict cartilage damage prior to conventional MRI.

The authors of one poster had designed a **Patient-Derived Symptom Assessment tool** to determine from the patient's answer to a number of questions whether an acute joint bleed was present. Particular questions were more helpful with identification of a joint bleed, and therefore provided a higher accuracy score. There has been considerable debate about how best to assess an acute joint bleed accurately. This assessment tool requires more investigation prior to being used in the wider community, however it shows great promise, and would be particularly useful for areas where ultrasound is not easily accessed.

Some of my personal highlights were the presentations about scoring systems and assessment tools

Poster presented at MSK 2021, the 17th WFH International Musculoskeletal (MSK) Congress. Reprinted with permission from the authors

Diagnosis of Hemophilic Hemarthrosis: Development of a Patient-Derived Symptom Assessment Tool Using Musculoskeletal Ultrasound (MSKUS) for Validation



Srila Gopal¹, Richard FW Barnes¹, Lena Volland¹, David Page², Annette von Drygalski¹

¹Hemophilia and Thrombosis Treatment Center, University of California San Diego, ²Canadian Hemophilia Society

Background

- Patients with hemophilia (PWH) experience painful joint episodes which may or may not be associated with new hemarthrosis
- Point of care (POC) musculoskeletal ultrasound (MSKUS) is a valuable tool for rapidly diagnosing hemarthrosis
- Patient-derived questionnaires describing pain sensations have been suggested for diagnosing hemarthrosis
- We sought to validate a questionnaire developed by an experienced patient group, and compare it against POC-MSKUS to detect hemarthrosis

Methods

- We administered a patient-developed questionnaire comprising 20 questions (10 each associated with hemarthrosis and arthritis pain, respectively) to adult PWH experiencing acute painful episodes
- The questionnaire was developed by Mr. Page and derived from an open-text survey, sent to a group of "experienced" individuals with severe hemophilia A or B.
- Patient and providers were blinded to question assignment and the order of the questions was randomly scrambled
- The presence (or absence) of bleeding was confirmed by MSKUS
- We fitted univariate and multivariate generalized estimating equations to identify symptoms associated with hemarthrosis

Results

- Questionnaire administered to 32 patients, presenting with 79 painful joint episodes.
- 23 patients had Hemophilia A and the remaining had Hemophilia B
- Severe Hemophilia (Factor activity <1%): 22 patients
- Median age: 38 years (range 21-74 years)
- POC MSKUS detected hemarthrosis in 36 (46%) episodes

Representative MSKUS images of acute joint bleeding in a patient with hemophilia



Bleeding within joint

Supra-patellar bursa in long and short axis views showing widening of bursa, evidence of mixed echogenic signals, bursal contents that are partially compressible, consistent with clotted blood in the joint

Results

Table 1: Odds ratios (OR) relating pain associated with bleeds vs arthritic pain

Variable	OR	Lower CL	Upper CL
X19: No feeling of sponginess with movement	0.28	0.11	0.75
X5: No significant improvement after factor concentrate	0.29	0.12	0.68
X3: Irregular, non-progressive pain with movement or weight bearing	0.30	0.15	0.64
X16: Pain and discomfort in the absence of warmth or swelling	0.32	0.12	0.81
X2: Pain when flexing the muscle, or if joint, muscle nearest joint	0.35	0.14	0.83
X13: With activity, painless range of motion increases	0.38	0.15	0.95
X18: Moving through range of motion is painful, but feels moveable	0.52	0.18	1.46
X17: Limited, non-progressive swelling	1.01	0.41	2.50
X9: Little pain at rest	1.11	0.44	2.82
X6: Pain at rest	1.11	0.44	2.82
X10: Feeling of fullness in the joint	1.40	0.41	4.77
X11: Progressive swelling	1.47	0.49	4.37
X1: Rapidly increasing pain	1.50	0.59	3.80
X12: Swelling with increasingly painful pulsing sensation leading to joint immobility	1.54	0.36	6.51
X8: Progressive loss range of motion	1.55	0.55	4.38
X4: Pain and only when the muscle or joint is flexed	1.69	0.72	3.95
X20: With activity, range of motion decreases	1.84	0.64	5.30
X15: For non-target joint, recall of an initiating incident	2.18	0.72	6.64
X7: When resting, pain eases by not moving	2.38	0.94	6.02
X14: Like a balloon swelling with water	2.84	0.75	10.77

The potential predictors of hemarthrosis pain vs arthritic pain are ranked in order of increasing odds ratios for a bleed. Red/ highlighted rows indicate questions assigned to hemarthrosis per original questionnaire

Table 2: Predictor tool to ascertain the probability of joint pain to be associated with hemarthrosis

Symptom	'Y' or 'N'	'Y' or 'N'	'Y' or 'N'
X19: No feeling of sponginess with movement.	Y	Y	N
X16: Pain and discomfort in the absence of warmth.	Y	Y	N
X5: No significant improvement after factor concentrate.	Y	N	N
X3: Irregular, non-progressive pain with movement or weight bearing.	Y	N	N
X2: Pain when flexing the muscle.	Y	N	N
Probability of hemarthrosis	6%	61%	93%

Conclusions

Objective diagnosis of hemarthrosis by MSKUS facilitated a prediction tool by informed selection of the most meaningful patient perceived indicators of arthritic versus hemarthrosis pain. The tool requires further validation and will be particularly helpful in situations where MSKUS is not readily available

Funding Source: Health and Resources Service Administration (HRSA) Grant H30MC24045

With new treatments and developments in gene therapy, we are all driving towards the goal of future generations growing up without joint bleeds and joint damage, and without limitations in sport or career choices. This will ultimately change the physiotherapy management of haemophilia, and ongoing screening or scoring systems will need to also adapt to incorporate these changes. This is a very exciting time in the world of haemophilia!

Thank you so much to Haemophilia Foundation Australia for supporting all Australian Haemophilia Treatment Centre Physiotherapists with their registration. It was such an honour to see some of my physiotherapy colleagues presenting at different sessions and sharing their expert knowledge and experience with the world. 🇦🇺