

Clinical Characteristics and Complications in Patients with Complex Vascular Anomalies

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Introduction

Vascular anomalies are errors in the development of blood vessels that are further subdivided into tumors and malformations.

Tumors

- Increased cell proliferation with period of rapid growth followed by involution phase

Malformations

- Abnormal channels lined by endothelial cells found within vascular structures
- No pathologic cell turnover
- Grow with patient

These disorders are rare, with some forms affecting less than 1% of the population.¹

The heterogeneity and complexity of these conditions has led to the establishment of clinics that bring together the skillsets of different fields such as dermatology, hematology/oncology, interventional radiology, plastic surgery, and many others to optimize interventional strategies. This study aims to better describe a cohort of patients requiring multidisciplinary management.

Methods

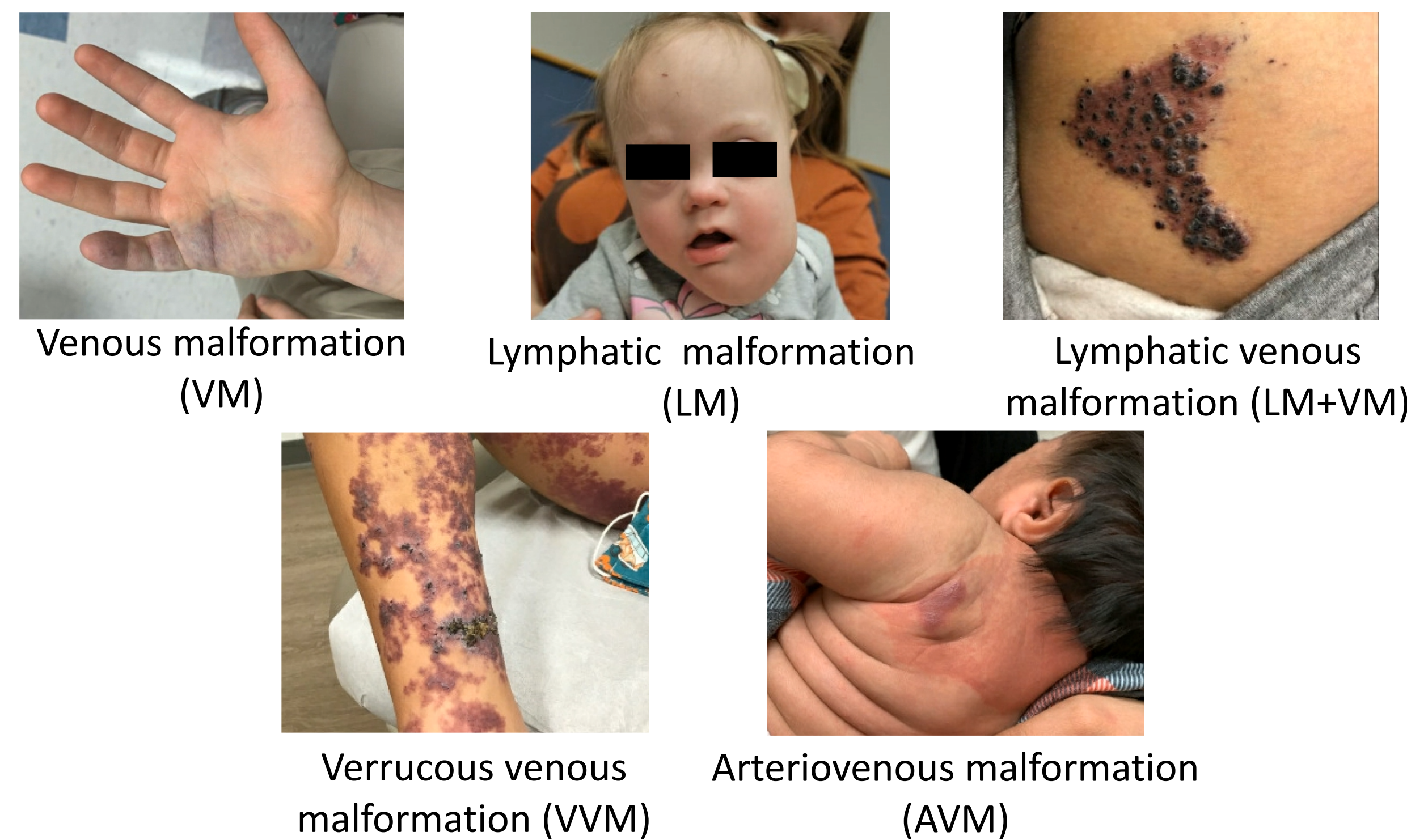
Study Population

- 100 patients who presented at the Vascular Lesions Clinic (VLC) at Riley Children's Hospital from May 2020 to May 2022

Data Collection

- Demographic and clinical variables obtained from the electronic medical record were recorded in a new RedCap database
- Lesions were classified as localized (arising from a central point) vs segmental (encompassing a developmental segment)
- Quality-of-life information was captured using the OVAMA² (Outcome measures for VAscular MAlformations) survey
- The general symptoms scale and appearance scale were studied for quality-of-life trends
- Excel and RedCap were used to analyze the data

Results



N=100

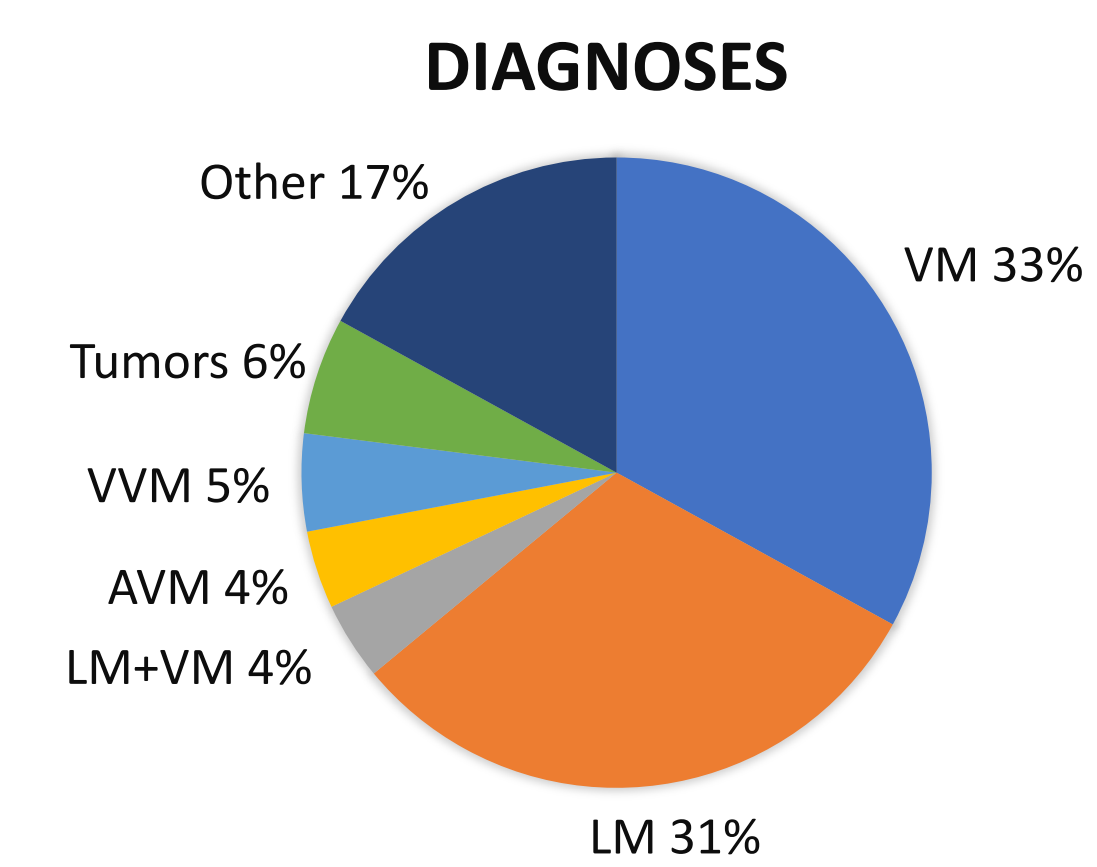
Sex

- LMs and VMs had no male or female predominance

Age

- Patients with LMs (3.36 yrs, N=31) had a lower median age than patients with VMs (8.35 yrs, N=32)

*One 90 yr old VM outlier excluded



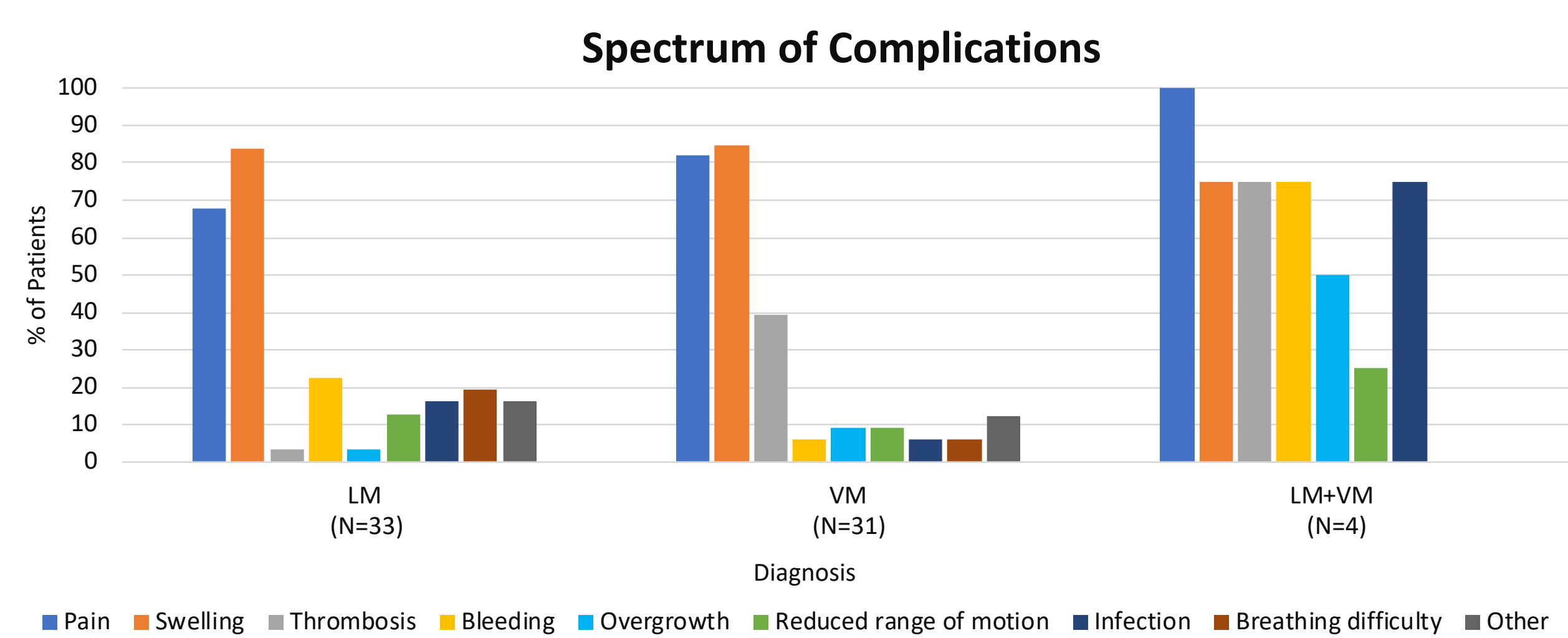
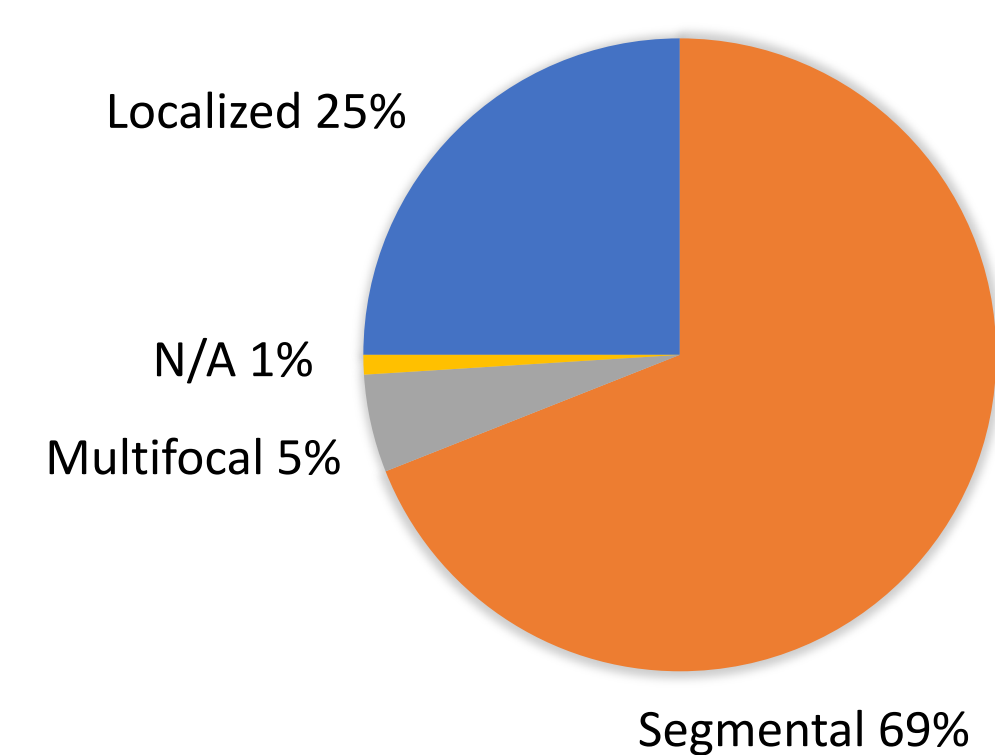
LESION MORPHOLOGY

Morphology

- Majority of LMs (67.74%, N=31) and VMs (72.73%, N=33) were segmental

Complications

- Pain and swelling were the most common complications with LMs and VMs



Location

- Head/neck most common (33%, N=100)
- Head/neck more common with LMs (54.84%, N=31) compared to VMs (33.33%, N=33)
- More than one anatomic region more common with VMs (24.24%, N=33) compared to LMs (19.35%, N=31)

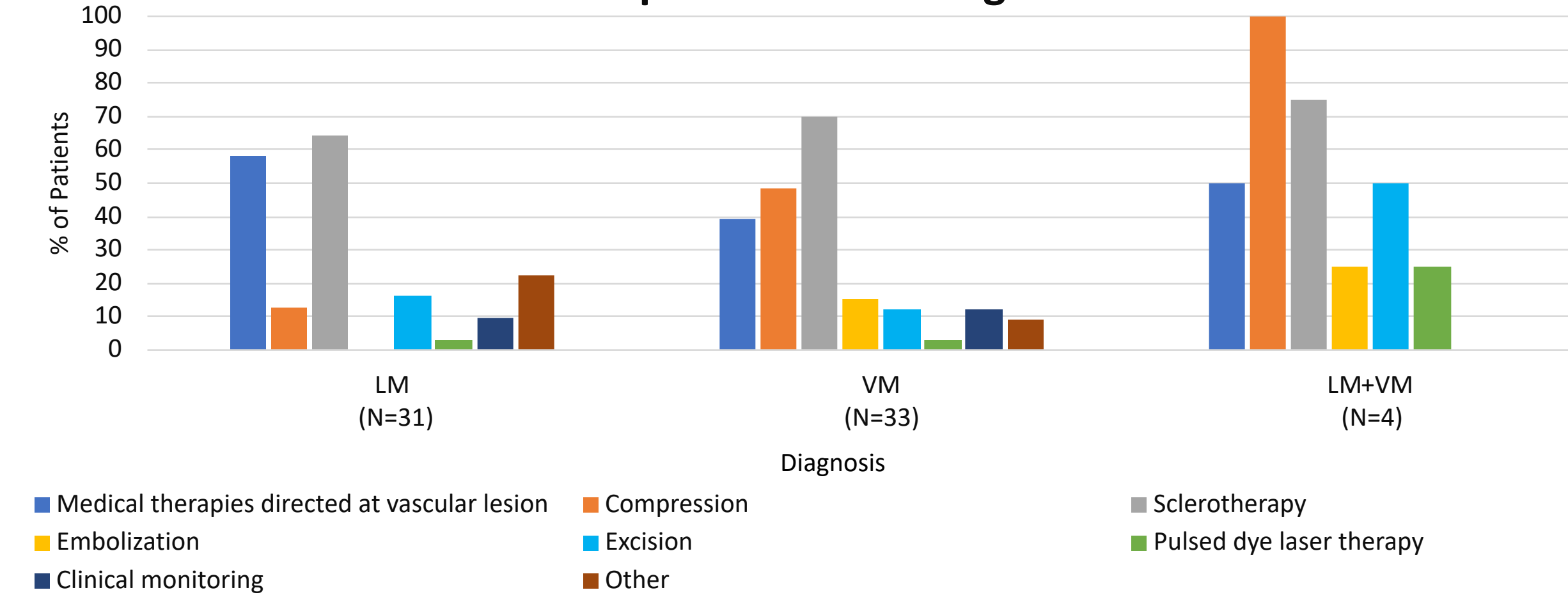
Management

- VMs associated with higher median number of sclerotherapy treatments than LMs
- 51% of patients treated with sclerotherapy (N=100)
- Median number of sclerotherapies = 4 (Range = 1-20, N=51)

Number of Sclerotherapy Treatments

Number of treatments	LM (N=20)	VM (N=23)	LM+VM (N=3)
Mean (± S.D.)	3.25 ± 2.49	6.91 ± 5.64	2 ± 1.73
Median	2.5	5	1
Range	1-12	1-19	1-4

Spectrum of Management



Quality-of-Life

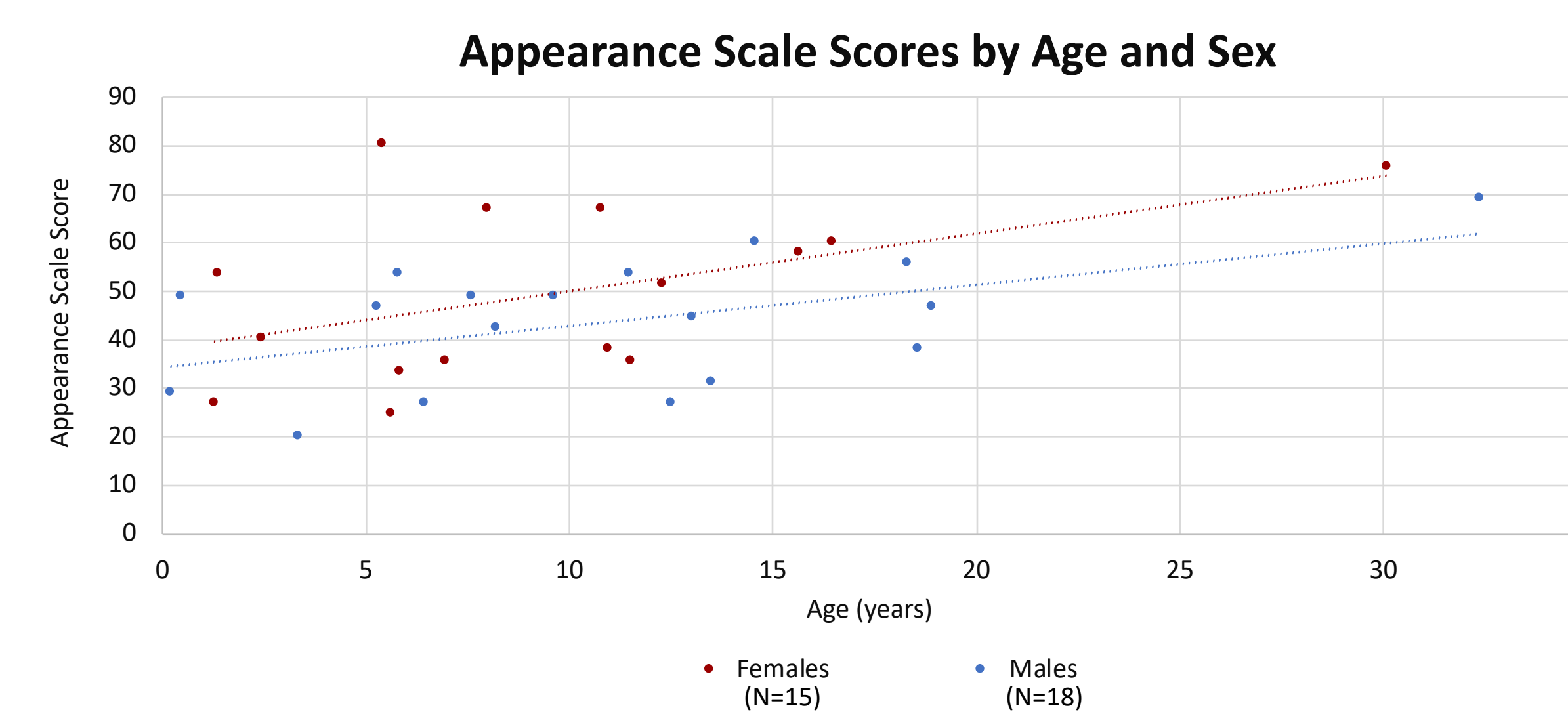
- Less satisfaction with lesion appearance correlated with older age, female sex, larger lesion size, and lesion location on lower extremities

Appearance Scale Scores by Lesion Size

Appearance scale scores	Greater than 50 cm ² (N=14)	Less than 50 cm ² (N=18)
Mean (± S.D.)	55.87 ± 14.68	40 ± 12.24
Median	55.56	38.89
Range	80-24.44	66.67-20

*Higher score indicates less satisfaction with lesion appearance

- General problems – LMs had worse outcomes than VMs



Discussion

Diagnoses

- The multidisciplinary clinic at Riley Children's Hospital has a patient composition similar to other large vascular lesions centers reported in the literature³
- Compared to other vascular anomalies centers, our center has a larger proportion of malformations compared to vascular tumors. This difference is due to vascular tumors being seen in single specialty clinics

Complications

- Most common complications observed in VLC were pain and swelling, consistent with a retrospective study⁴ of 133 patients in another multidisciplinary clinic

Quality-of-Life

- Previous quality-of-life analysis⁵ based upon 692 vascular malformation patients indicated head/neck lesions correlated with lowest quality-of-life
- In contrast, our study showed lower extremity lesions had worst outcomes

Study Limitations

- Sample size: Analysis between subtypes is limited by lower numbers of patients with rare anomalies
- Selection bias: Patients presenting to the VLC tend to have larger and more complex vascular anomalies requiring multispecialty care
- Data collection is ongoing so analysis of treatment details could not yet be performed

Conclusion

The characterization of this cohort highlights the multidisciplinary care needed for patients with complex vascular anomalies. This study can serve as a launching point for prospective studies of patient outcomes, complication rates, and quality-of-life.

References

