Mitral Valve Prolapse and the Pickelhaube

Denise Ignatowski, BS, RDCS
Prevalence

11-13% : General population

Malignant Cases
High Risk features

- Mitral annulus disjunction
- Systolic curling
- Pickelhaube Spike

Mitral annulus disjunction

Hypermobility of the MV apparatus
Mitral annulus disjunction

Hypermobility of the MV apparatus

Mitral annulus disjunction

Paradoxic systolic increase of the mitral annulus diameter
Mitral annulus disjunction
Paradoxical systolic increase of the mitral annulus diameter

Diastole  Systole

Systolic Curling
Increased myocardial function adjacent to the prolapsed leaflet
**Systolic Curling**

Focal hypertrophy of the LV base
Basal to mid LV wall thickness ratio >1.5

**Ballerina foot Deformity**
Pickelhaube

German Helmet
Pickelhaube
High-velocity systolic signal with tissue Doppler imaging resembling the Pickelhaube

Malignant phenotype

The Pickelhaube Sign:
Novel Echocardiographic Risk Marker for Malignant Mitral Valve Prolapse Syndrome

Lakshmi Muthukumar MD, Faraaz Rahman MD, M. Fuad Jan MBBS MD, Armaan Shaikh DO, Lindsey Kelvin RDCS, Anwer Dhaia MD, Arshad Jahangir MD, A. Jamil Tajik MD
“The tugging of the posteromedial papillary muscle in mid-systole by the myxomatous prolapsing leaflets causes the adjacent posterobasal LV wall to be pulled sharply toward the apex”
Strain Correlation

-38 %
Strain Bullseye

Postero-Medial Papillary Muscle

-38 %

Case #1

42 y.o. woman

h/o Postpartum Cardiomyopathy, 2009

s/p Single chamber ICD
• Annular Disjunction
• Mitral Annular Systolic Increase
• Systolic Curling
• Localized hypertrophy

> 20 cm/s
Malignant MVP

• Annular Disjunction
• Systolic Curling
• Pickelhaube
  - Systolic peak > 16 cm/s
  - Exaggerated Strain Value
Case #2
66 y.o. woman

Visited family practice doctor for neck pain

2/6 systolic murmur
- Annular Disjunction
- Systolic Curling
- Focal hypertrophy
- 41 %
THANK YOU!