Dermatomyositis (DM) is an idiopathic inflammatory myopathy (IIM) characterized by multiple cutaneous and systemic presentations – Diagnosis is often missed/delayed by an average of 15.5 months
- Myositis-specific (MSA) and myositis-associated antibodies (MAA) are increasing in popularity
  - MSA/MAA present in > 50% of DM/PM patients
- Commercial myositis panels are increasing in popularity
  - Multiple modalities, including line immunoassay (LIA), immunoprecipitation (IP), multiplex bead assay (MBA), and enzyme-lined immunoprecipitation assay (ELISA)
  - Among IIMs only 14% had a positive MSA and 21% had a positive MAA using commercial panels
- To characterize this discrepancy, we performed a retrospective study of patients in a prospectively-collected database of patients with DM
- Objectives of the study:
  - Characterize the use of commercial myositis panels in a clinical setting
  - Compare commercial myositis panels to research lab myositis panels

**Background**

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**Methods**

- 80 sera of DM patients sent to Johns Hopkins for research myositis panel
- EUROMMUN Line Immunoblot Assay: – Mi-2, SRP, Ku, Ro-52, MDA-5, SAE-1, PM/ScI, and anti-synthetase antibodies (Jo1, PL-7, PL-12, OJ, EJ)
- Good agreement with IP except for TIF1-γ
- MBL Enzyme-linked immunosorbent assay (ELISA)
  - TIF1-γ
  - Chart review for demographics & commercial myositis panel results
- Commercial panels categorized as “concordant” or “discordant”
  - Concordant – All results of commercial panel agree with JHU panel
  - Discordant – Commercial panel results contradict JHU panel results (false positives or false negatives)

**Disclosures**

- No conflicts of interest to disclose

**Table 1: Patient Demographics**

| Median Age at Blood Draw (IQR) (years) | 53.5 |
| Male | 1 (5.6) |
| Female | 17 (94.4) |
| Caucasian | 16 (88.9) |
| Asian | 1 (5.6) |
| Classic | 7 (38.9) |
| Amyopathic | 11 (61.1) |
| Antimalarials | 9 (50) |
| Immunosuppressants | 8 (44.4) |
| Sera Collection (IQR) (days) | 73.5 |
| Time between Commercial and Research Lab (IQR) (days) | 73.5 |

**Table 2: Comparison of Commercial Myositis Panels**

| Commercial Lab (n=18) | Modality | Antibodies in Panel | Concordance Rate (%) | Discordance Rate (%) |
| ARUP Labs (n = 6) | LIA | PM/ScI, SAE1, MDAS, NXP2, TIF1-γ | 3 (50) | 3 (50) |
| Quest Labs (n = 6) | MBA | Ro 52, Jo-1 | 6 (100) | 0 (0) |
| RDL Reference Laboratory (n = 3) | Radio-IP Assay | Ro-52, OJ, PL-7/12, SRP, Jo-1, PM/ScI | 3 (100) | 0 (0) |
| Immco Diagnostics (n = 3) | ELISA | Ro-52, PM/ScI | 2 (66.6) | 1 (33.3) |

**Results**

- 18 of 80 patients (22.5%) had commercial myositis panels performed within one year of sera collection
- Majority of patients were female (94.4%) and Caucasian (88.9%) (Table 1)
- Median time from date of commercial lab to date of sera collection was 73.5 days (IQR 27.3 – 128.8 days)
- Most labs performed by ARUP (n = 6) and Quest laboratories (n = 6) (Table 2)
- ARUP labs had the greatest discordance rate (50%) (Table 2)
  - Ro-52 (1 false positive, 1 false negative)
  - TIF1-γ (1 false negative)
  - Immco Diagnostics had one discordant value (OJ, false negative)
  - While Quest and RDL had 100% concordance they did not test for all antibodies
  - Did not test for: Ro-52, TIF1-γ, PM-ScI, SAE1, NXP-2, MDA-5
  - Likely result of test ordering, not necessarily laboratory capability

**Conclusions**

- Discordancy of results and limited testing contribute to the discrepancy between commercial myositis panels and research lab myositis panels
- Factors contributing to discordance include
  - Different modalities among different commercial panels
  - Limited standardization/calibration of commercial assays
  - Changes in disease status over time
  - Myositis panels need to be both accurate and extensive to make a meaningful impact on the diagnosis and treatment of DM
- Physicians should be aware of the antibodies tested and the limitations of commercial labs when ordering myositis panels

**References**