MELISA® a valuable diagnostic tool in orthopaedic surgery

Immune responses to metals in medical devices "The symptoms … may be limited to the region where the device is implanted or may be more generalized. Reported systemic symptoms include fatigue, rash, joint and muscle pain, and weakness. (Although uncommon and varied, these symptoms can sometimes mimic more well-established inflammatory conditions, such as systemic lupus erythematosus.)" (FDA 2019)

An inflammatory response activated by metal allergy may be one of the causes of ill health in patients. MELISA, a clinically validated blood test, (Valentine-Thon E 2003) can identify if metals are causing an immune reaction, which may affect health. Localized symptoms such as pain, rash and swelling around the implant may be present. Additionally, numerous systemic symptoms including chronic fatigue, fibromyalgia, join pain, muscle weakness, cognitive dysfunction are reported.

Studies show that many symptoms will improve or disappear if exposure to metals identified as causing allergy is removed:

Studies

- 78% of allergic patients who underwent revision surgery to change their implants and remove the allergen reported that they were "moderately" or "a lot" better. (Pacheco 2014)
- 60% of patients with poorly functioning implants have metal allergy compared to only 25% with well-functioning implants (Hallab 2001)
- 76% of chronic fatigue sufferers experienced health improvement after replacing dental restorations containing allergenic metals, identified by MELISA testing (Stejskal 1999)
- 71% of patients with autoimmune diseases and mercury allergy improved after having their amalgam fillings removed (Prochazkova J 2004)
- 50% of fibromyalgia patients no longer fulfilled the criteria for fibromyalgia after restricting exposure to metals they were allergic to. 20% had reduced trigger points and all reported improvement in symptoms (Ö. K. Stejskal V 2013)
- 63% of patients with connective tissue disease were allergic to two or more metals (R. T. Stejskal V 2015)

Based on more than 20 years' research, MELISA has identified symptoms and indicators for those likely to be metal hypersensitive. If several of these are present, allergy to metals should be considered, once infection and mal-positioning have been excluded.

Pre- surgery - Indicators for metal allergic patients
Atopy: eczema, asthma, food allergies, hay fever (in immediate family also)
Autoimmune disease: rheumatoid arthritis, thyroiditis, coeliac disease, Sjögren's, multiple sclerosis (in immediate family also)
Skin reactions to jewellery, metal piercings, metal clasps and buckles etc (immediate family also)
Positive patch testing, dermal allergies to creams, cosmetics
Chronic fatigue syndrome, fibromyalgia, multiple chemical sensitivity and/or multiple non-specific symptoms of unknown origin such as fatigue, pain, "brain fog", depression

Post surgery - Indicators for metal allergic patients
Slow healing after metal implants
Unexplained pain, loosening or multiple unidentified infections
Generalised/localised skin rashes, urticaria, swelling
Unexplained change in health post-surgery; fatigue, rashes, joint/muscle pain, headaches, low grade fever, "brain fog", depression, mood changes

Specific metals causing allergies can be identified with MELISA testing. Relevant panels can be selected according to the patients' exposure or individual metals can be selected for those with complex metal exposure. A complete evaluation with a list of metal exposure can be provided if the full questionnaire is completed.

Orthopaedic panels	
Cobalt Chrome, Vitallium, Stainless steel	Chromium, Cobalt, Manganese, Molybdenum, Nickel, Tungsten
Titanium or Titanium alloy (inc Nitinol)	Aluminum, Nickel, Niobium, Titanium dioxide, Titanium sulphate, Vanadium
Oxinium	Chromium, Niobium, Tin, Zirconia*
Spinal implants	Aluminum, Chromium, Cobalt, Nickel, Niobium, Manganese, Molybdenum, Tantalum, Titanium dioxide, Titanium sulphate, Tungsten, Vanadium
Orthopaedic pre-test	Aluminum, Beryllium, Chromium, Cobalt, Manganese, Molybdenum, Nickel, Niobium, Tantalum, Tin, Titanium dioxide, Titanium sulphate, Tungsten, Vanadium, Zirconia*

Common sources of metal exposure exact metal composition may vary.

*Zirconia testing has been developed for research purposes and the clinical relevance of a positive result is not yet known

References

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