Fact sheet on ir-Myositis

Myalgias are common in cancer patients treated with immunotherapy. However, inflammatory myositis caused by immunotherapy (ir-Myositis) is much less common, affecting less than 1% of patients. Though rare, ir-Myositis is associated with a high case fatality rate (17%), second only to myocarditis (40%). Thus, a high index of suspicion is needed so that a serious complication of immunotherapy is not discounted in patients who have many other reasons to complain of muscle aches and pains.

How does ir-Myositis present?
Ir-Myositis generally presents with rapidly progressing proximal muscle weakness and elevated muscle enzymes early (within 1-2 months) after initiation of immunotherapy. Patients can also report myalgias. Other muscle groups can also be involved and the patient can present with distal, axial (such as head drop) and oculo-bulbar (such as ptosis and dysarthria) weakness. Dysphagia and diaphragmatic weakness have also been described, with the latter contributing to fatal outcomes. Rash is rarely reported in ir-Myositis.

How is ir-Myositis investigated?
A cancer patient treated with immunotherapy who presents with myalgias and weakness should be investigated with muscle enzymes, in particular creatinine kinase which is generally in the 1000s, electromyogram, magnetic resonance imaging and muscle biopsy. Myositis-related autoantibodies are usually absent. The presence of anti-TIF1 or anti-NXP2 antibodies suggests the presence of a paraneoplastic myositis rather than ir-Myositis.

What are the 3 Ms?
Although overlap of myositis-myocarditis-myasthenia gravis (3 Ms) has been described without exposure to immunotherapy, this is very rare. On the contrary, myocarditis and myasthenia gravis each overlap with over 15% of cases of ir-Myositis, and the triad occurs in 3% of cases. This overlap carries a very poor prognosis. Patients presenting with ir-Myositis should be investigated for concurrent myocarditis and myasthenia gravis, including troponin, electrocardiogram, cardiac magnetic resonance and repetitive nerve stimulation.

How is ir-Myositis treated?
Myositis rarely presents as a grade 1 or 2 adverse event. Many patients will require hospitalization given the acute, rapidly progressing presentation of myositis and the need to investigate for overlap disease. The cornerstone of treatment is prednisolone 1-2 mg/kg/d. IVIg and plasmapheresis should be considered, as well as steroid-sparing immunosuppressants such as azathioprine, methotrexate and mycophenolate. Immunotherapy should be permanently discontinued in most cases.