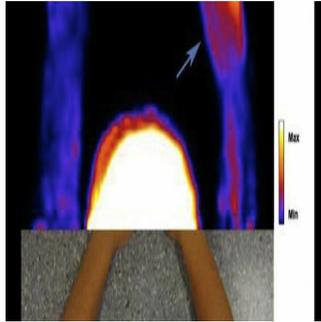

PET Scan Illuminates Tennis Elbow Pain Processes



Researchers from Uppsala University have demonstrated that diagnostic imaging methods can be used to explore physiological processes in soft tissue pain such as chronic tennis elbow.

By publishing his findings in the prestigious journal PLOS ONE, pain physician and researcher Magnus Peterson is presenting a new use of positron emission tomography (PET) together with a tracer for the signal receptor NK1 in order to create an image of a physiological process associated with pain.

Chronic pain is a considerable health issue, causing significant socioeconomic costs and suffering of the patient. As the most widespread type of pain, musculoskeletal soft tissue pain (i.e. from muscles, tendons and ligaments) is also one of the top reasons for consultation in health care, however there is still a lack of efficient methods in use to localize and diagnose underlying pathophysiological mechanisms.

Clinical examination remains the determining factor for diagnosis yet it offers no insight into the underlying mechanisms potentially causing the pain, as a result treatment is based exclusively on practical medical experience.

Magnus Peterson has worked with positron emission tomography (PET), a tool for diagnostic imaging, in combination with a specific tracer for the signal receptor NK1. The tracer is injected into the blood where it circulates through the body and binds to available NK1 receptors. The signal from the radioactive tracer can then be captured as an image outside the body using PET, offering a highly valuable improved diagnostic method for the very first time.

Petersons' study clearly shows an image of elevated levels of NK1 in the painful area compared with the healthy arm.

When tissue damage occurs there is an up-regulation of the neuropeptide substance P and its receptor NK1 in both the dorsal horn of the spinal cord and the peripheral painful tissue as part of an interaction between peripheral nerves, immune cells, and the tissue itself. This process appears to assist guidance of the body's own repair process. In chronic tennis elbow, this up-regulation of the substance P-NK1 system lingers on, and with the help of PET and the marker for NK1 this is what the researchers have managed to visualize.

This newly discovered method holds major promise, however expenses are currently running high due to the costly equipment required for the complicated PET procedure.

Magnus Peterson is optimistic that the development of less expensive markers will be possible in future, allowing for the technique to be used in everyday clinical practice. Concluding, he adds that a further aim of the researchers is to generate markers for other physiological processes known to be active in chronic soft tissue pain.

Source: [AlphaGalileo](#)

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