

Shoulder Tendinosis and Related Clinical Entities Treated with ESWT. Histopathological and Clinical Correlation

Author:

M. Branes, L. Contreras , L. Guiloff , J.A. Branes

Institution:

Santiago , Chile.

Shoulder Tendinosis, Shoulder Tendinosis with mid-substance tear and Calcified Shoulder Tendinosis account for a significant number of orthopaedic disorders. All of them share a common and defined histopathologic substrate called "tendinosis". Based on our experience with Calcified Tendinosis and ESWT, we extended the application for shock waves to other specific clinical conditions.

Between December 2003 and June 2005, 90 patients with shoulder pain and dysfunction for 6 months or longer and without prior shoulder surgical procedures were diagnosed using x-rays and echography, in one of three described categories. Cases of intramural tears were reviewed with an Echographer in order to accept only those patients with intratendineous lesion (65 female, 25 male, mean age = 58 years). They were evaluated using VAS and percentage of dysfunction compared to the normal shoulder. Treatment was applied using an Orthospec (Medispec) device, 4,000 impacts/0.33mJ/mm², in a single session without anaesthesia. Sonographic control at 12 weeks and x-rays and sonography 24 weeks later. In this series, 12 patients complicated with Frozen Shoulder and therefore received a short course of oral corticoids and PT.

For histopathologic comparison, samples were collected from 10 patients that underwent surgical repair for the same clinical indications at other treatment centers; five of them received the ESWT schedule immediately prior to surgery.

Seventy percent of the patients rated the procedure a "success" because they were pain free and experienced good shoulder function (with improving images of the tendon including calcium resorption).

Twenty percent rated the procedure a "partial success" (8 of them had Frozen Shoulder) and 10% declared it a "failure". Thirteen patients (14%) opted for surgical resolution because of a lack of subsidence of pain/shoulder dysfunction, being the source for histopathologic studies. HISTOPATHOLOGIC RESULTS: became evident to light microscopy with usual stains that tendon tissue showed a consistent hypervascularization, characterized by hypertrophic new blood-vessels and new cellularity with fibroconnective repair. This reparative aspect of the tissues was also seen in the edge of intramural tears in tendinopathic areas. In many fields was possible to see areas of normal tendon close to tendinopathic lesion and in between appearing neo-vascularity without distortion or reaction of resident blood vessels. It was also evident that the repair mechanism did not occur through scarring tissue but through deposition of proteinaceous material, according to Toluidine Blue Stain results. During the histopathologic observations there were areas of necrosis or tissue distortion or signs of anaplasia/displasia or scarring. The histopathologic features of neo-vascularization induced by ESWT have always been quite similar in different areas and different tissues either from the same patient or among different patients.

The histopathological research on human tissues that have been treated with ESWT for specific clinical conditions is showing remarkable results, characterized by new vascularity and fibroconnective tissue repair, both conditions supported by well-described human healing capabilities.