سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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سامية محمد مصطفى

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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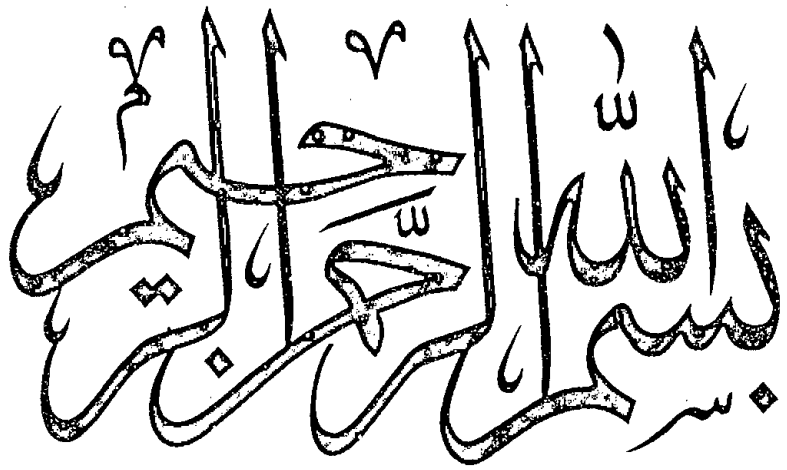

Evaluation of the role of Facet Denervation for treatment of non-surgical low-back pain

Thesis
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INTRODUCTION

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Backache is a symptom, not a disease, and patients with this complaint may be manifesting the effects of physical or emotional illness. Low-back pain may arise from degeneration of the lumbar articular facet joints. (1)

Low-back pain is extremely prevalent and is the second most common reason for people to seek medical advice (the first is headache). (2) It accounts for ~ 15% of all sick people and is the most common cause of disability in persons < 45 years old. Only 1% of patients will have nerve-root symptoms. The prognosis for most cases of low-back pain is good, and improvement usually occurs with little or no medical intervention. (2, 3)

Goldthwait first turned attention to the facets as a source of pain in 1911. Ghormley (1933) introduced the term (facet syndrome). Facet joints at that time were thought to be the main source of low-back pain and sciatica till 1934 when Mixter and Barr implicated the role of herniated disc in sciatica. (4, 5) In 1971, Rees developed the procedure of

bilateral subcutaneous rhizolysis using a long scalpel blade penetrating to the inter-transverse ligament for severing the posterior rami supplying the facet articular joints. (2) Later on, Shealy developed a more sophisticated method using a radiofrequency probe. (6)

Electrical stimulation of the living tissue has been subjected since 46 AD when Scribonius Largus employed electrical discharges of the torpedo fish to treat gout and headaches. This controlled electrical current was used to stimulate the living tissue by Galvani, who described twitches of the frog leg when touched by a charged instrument. (7, 8)

Cushing and Bovi first introduced electrical current for tissue coagulation to surgery. The instrument developed by these two pioneers is still in use in all fields of surgery. (7)

The poor control of temperature when using alternate current, and the generation of gases because of tissue heating beyond the boiling point, precluded the use of the regular electrocautery in stereotactic surgery. (7) Kirschner used the electrocautery for stereotactic treatment of trigeminal neuralgia. (7) He introduced the elecrtocautery in the gasserian ganglion through the foramen ovale. However, he soon

abandoned the procedure, probably because of extensive destruction of the gasserian ganglion. (7)

Hess developed radiofrequency (RF) coagulation in the 1930's. (7) The aim of this work was a controllable form of energy to coagulate tissue in the depth of the brain. Radiofrequency was used in man by Talairach, and further perfected in animal experimentation and in humans by Sweet et al. (7, 8)

However, the radiofrequency techniques also offered the opportunity to obtain electro-physiological studies to improve localization of the lesion. This unique ability made RF the technique of choice for making precise and selected lesions in the CNS for treatment of functional disorders. (7, 9, 10)

Further developments in electrode manufacturing allowed for the formation of lesions in a variety of shapes and sizes. (7)

Applications of electrical stimulation of the nervous tissue progressed in the therapeutic and localization fields. Parameters of stimulation were perfected to generate clinically detectable responses for stereotactic localization, and for therapeutic purposes. (7, 11)

Anatomy:

General vertebral features: (12)

A vertebra has basically a ventral body and a dorsal vertebral (neural) arch, extended by lever-like processes, together enclosing a vertebral foramen, occupied by the spinal cord, meninges and their vessels. Opposed surfaces of adjacent bodies are bound together by inter-vertebral discs of fibro-cartilage. The foramina form a vertebral canal for the spinal cord, and between the neural arches, near their junctions with the vertebral bodies, inter-vertebral foramina transmit mixed spinal nerves, smaller recurrent nerves and blood and lymphatic vessels. (13)

The cylindroid vertebral body varies in size, shape and proportions in different regions. In the horizontal plane, profiles of most bodies are convex, but concave dorsally where they complete the vertebral foramen. Small vascular foramina appear on the front and sides, but posteriorly there are small arterial foramina and a large irregular orifice (sometimes double) for exit of basi-vertebral veins. The vertebral arch has on each side a vertically narrower ventral part, the pedicle, and dorsally a broader lamina. Projecting from their junctions are paired transverse, superior and inferior articular processes, and dorsally a median spinous process. Pedicles are short, thick, rounded