Conclusions. The proposed formulas represent a simple, applicable and individualized method to calculate the OrF linear length in cases of complete destruction of the IOR and OrF, with accuracy and without the use of expertise material.

PEDAGOGICAL MATERIAL CREATED BY AND FOR THE STUDENTS

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Key words: *education, neuroanatomy, observation, dissection*

Background. The classic anatomy lessons based on the observation/dissection of cadavers and anatomical pieces do not represent the experience of our students. Especially for head/neck and central nervous system the study is based on books or plastic/wax models. The few dissection sessions are hampered by the high number of students per class and restrictions on contact hours.

Aim. In an attempt to improve the quality and quantity of our teaching/learning models in Neuroanatomy, a multidisciplinary team composed of lab technicians, anatomy teachers and students was formed, which has developed several integrated projects. The objective is to promote and foster the research activity for students and simultaneously create pedagogical material for the pre and postgraduate phases.

Material and Methods. Between 2013–2018 five projects were developed in order to create anatomical models at the Institute of Anatomy of Lisbon Medical School (FMUL), involving 3–4 pre-graduate students per project. Laboratory techniques such as simple dissection, Klingler´s dissection, 2D/3D plastinization, 3D skull and vascular printing, complemented by CT/MRI imaging were developed. The models created are currently in use for Anatomy classes.

Results and Discussion. With these integrated projects it was possible to increase and diversify different pedagogical models in Neuroanatomy. It enabled the integration of dozens of students into research work, giving them access to various laboratory, anatomical and imaging techniques.

Conclusions. Some of the models can be used in clinical practice, allowing for the planning and training of surgical procedures and also be used for commercialization.

RE-DEFINITION OF MINIMAL INVASIVE SURGICAL INCISIONS USED IN ARTHROPLASTIC HIP SURGERY

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Key words: *hip region, anatomical landmarks, arthroplastic hip surgery*

Minimally invasive approaches to the hip show promise for less muscle trauma compared to conventional approaches. However, the surgical incisions used for such approaches are not well defined. Since the surgical window of minimal invasive surgeries are narrow, the risk of damaging the neurovascular structures around the hip is more likely when compared to alternative approaches.

Aim. The aim of this presentation is to review the anatomic course of the nerves around the hip region and to define alternative surgical incisions under guidance of standard anatomical landmarks during minimally invasive approaches to the hip to prevent iatrogenic injuries.

Materials and Methods. The courses of the superior gluteal nerve (SGN) and inferior gluteal nerve (IGN) and their branches documented on 28 gluteal regions of 14 formalin-fixed cadavers.

Results and Discussion. The surgical incisions were suggested by taking the posterior inferior iliac spine, greater trochanter and a line connecting these two points as reference. Based on the results of this review, the safe zone for the SGN and IGN can be suggested to be smaller than previously reported. Use of a minimally invasive direct posterior or lateral approach to this region puts the branches to the gluteus medius at risk. Moreover, a minimally invasive anterolateral approach to the hip may compromise branches to the tensor fasciae latae muscle.

Conclusions. Using the surgical incisions defined in this review may decrease surgical morbidity during minimal invasive arthroplastic hip surgery.

OLIVE LEAF EXTRACT POLYPHENOLS AND DIABETES MELLITUS

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Key words: *type 1 diabetes mellitus, olive leaf polyphenols, oleuropein, liver, glutamate*

Background. Diabetes mellitus (DM) is one of the most common diseases worldwide, affecting 415 million people.

Aim. Abnormal glutamate homeostasis may contribute to the pathogenesis of diabetes with its direct

and indirect effects on the integrity of the β-cells of pancreatic islets of Langerhans. The increased concentration of glutamate is present in all tissues with DM type 1 and type 2 DM.

Material and Methods. Type 1 DM was chemically induced in male Wistar rats by intraperitoneal injection of streptozotocin. The purpose of this study was to determine the level of glutamate in the liver of diabetic rats and to compare it to the level of glutamate in the liver of diabetic rats post-treated with different concentrations of polyphenols olive leaf extract (512, 768 and 1024 mg/kg). The concentration of glutamate was determined spectrophotometrically in 20% liver homogenate while polyacrylamide gel, sodium dodecyl sulphate (SDS-PAGE) was used to separate the proteins and to determine the difference in the expression of the same in the experimental groups.

Material and Methods. The increased levels of glutamate were established in the liver of diabetic rats. In groups of animals with short diabetes (8 days), glutamate concentration was proved to be lower compared to a group of animals with long-term diabetes (30 days). Furthermore, the results showed a significantly lower concentration of glutamate in the liver of post treated animals with olive leaf extract in a dose-dependent manner.

Conclusions. The results of this research lead to the conclusion that the olive leaf extract can be used in the treatment and co-treatment of type 1 DM and thus narrowing the consequences and complications that occur as a result of this multi-functional disease.

THE INFLUENCE OF ANTHROPOMETRIC DATA ON THE DEGREE OF NARROWING OF THE LATERAL INTERVERTEBRAL FORAMEN OF THE LUMBAR-SACRAL SPINE IN THE PRESENCE OF INTERFORAMINAL LIGAMENTS

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Key words: *intervertebral channels, constitution type, soft stroma, spinal cord*

Aim. To prove participation of a soft stroma of intervertebral channels of lumbosacral department of a backbone in development of an ischemia of the bottom departments of a spinal cord on the basis of studying of topographical anatomy of contents of channels at people with various type of a constitution.

Material and Methods. Contents of 620 lateral intervertebral channels of lumbar department of a backbone are studied. The material was distributed on groups, depending on constitution type. In preparations taken from people with dolichomorphic structure type have the least sizes (basically width of an aperture), and in preparations taken from people with brachymorphic type of a structure — the sizes the greatest.

Results and Discussion. In 54.84% in the field of lateral intervertebral channels of lumbosacral department of a vertebral column are found out — intraforaminal ligaments. 50% — mesomorphic addition type, 26.47% — dolichomorphic and 23.53% — by brachymorphic. Histologically found out formations have copular structure. The copular apparatus reduces free space round the vessels which are passing in the intervertebral channel, in limits from 44.97 to 79.84% that can lead to a compression of the contained intervertebral channel both at a trauma, and at is degenerate-dystrophic diseases of a backbone. The worst conditions for contents of intervertebral channels are framed at people with dolichomorphic type of a structure of a body in the presence of plural intraforaminal ligaments.

Conclusions. Such combination based on results of given research, can meet at 25.5% of people with dolichomorphic type of a structure of a body.

BIOMECHANICAL METHODS IN A COMPLEX ASSESSMENT OF THE MORPHO-FUNCTIONAL STATE OF THE HUMAN SKELETON IN NORMAL AND PATHOLOGICAL CONDITIONS

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Key words: *skeleton, anatomy, biomechanics, trauma*

Aim. A complex study of the structure and biomechanical properties of tubular bones, ligaments of the spine and individual joints of the human of was carried out.

Material and Methods. Investigation of the structure and biomechanical properties was carried out on fetus, newborns and adults. Functional biomechanical tests were evaluated in healthy and patients with a fracture of the diaphysis of tubular bones. In the study of morphology, anthropometric, anatomical and histological methods of investigation were used. To assess the biomechanical parameters of the ligaments, elastic-strength properties were studied. The mechanical properties of the bones were studied by analyzing the responses of functional biomechanical tests. To do this, the tubular bones were externally affected by the sound frequencies.