

Conclusions: Second-year students have sufficient background to understand molecular pathology techniques and are interested in learning diagnostic and molecular pathology. The case-based format fostered mastery of the material and student-run presentations integrated the video data, literature resources and other data students had gathered independently. The initial pilot was well received. The lower response score regarding clinical decision-making (3.6) likely reflects the emphasis of diagnostic and molecular pathology in the pilot. Future sessions will provide data for improving the structure and content of this model of teaching and its integration into the medical curriculum.

Electron Microscopy

201 OSMOPROTECTANTS IN TISSUE SAMPLES PROCESSED FOR IMMUNOGOLD ELECTRON MICROSCOPY

Mark Koina, ACT Pathology, The Canberra Hospital, Garran, Australia; *Lesley Maxwell*, ACT Pathology, Garran, Australia; *Jane Dahlstrom*, ACT Pathology, The Canberra Hospital and Australian National University Medical School, Garran, Australia

Background: Osmoprotectants are naturally occurring chemicals that are accumulated in stress tolerant organisms and serve to protect membranes and/or proteins. Previously we have demonstrated that some osmoprotectants can protect the ultrastructure of cell suspensions in LR-white, a traditional immunogold labelling resin. The aims of this study were to examine the effect of adding certain osmoprotectants to the primary electron microscopic fixative and assessing its impact on immunogold labelling of these tissue samples and ultrastructural preservation following processing into LR White and epoxy resins.

Design: Samples of pancreas were primary fixed in 2% Glutaraldehyde with various osmoprotectants including Betaine, Carnitine, Ectoine and Methyl Gluco-pyruvate. The tissues were treated with various antigen retrieval methods and subsequently processed into LR-white or epoxy resins in the standard way. Immunogold labelling was performed and the quality of the labelling and preservation of ultrastructure assessed independently by two electron microscopists.

Results: Carnitine, Ectoine and Methyl Gluco-pyruvate resulted in improved preservation of the tissues and improved immunogold labelling. The antibody was easier to localise making interpretation simpler.

Conclusions: The addition of certain osmoprotectants in the processing of tissue for electron microscopic examination leads not only to better preservation of the tissue but also improved immunogold labelling efficiency and easier identification of antigenic sites.

202 CELLULAR ANGIOFIBROMA OF THE CORPUS SPONGIOSUM: CASE REPORT

Lorena Posligua, Baylor College of Medicine, Houston, TX, United States; *Ittmann Michael*; *Krishnan Bhuvaneshwari*, Baylor School of Medicine/Michael E DE Bakey VA Medical Center, Houston, TX, United States

Background: Cellular angiofibroma (CA) is a benign mesenchymal neoplasm. It was initially described, arising in the vulva by Nucci et al in 1997. We report a case of cellular angiofibroma arising in the bulbar corpus spongiosum alone with the electron microscopic findings.

Clinical History: The patient is a 65 year old white male who presented with a slow growing, lobulated, well circumscribed 6.5 x 5.7 x 3.4 cm mass arising from the corpus spongiosum in the penile bulb. Gross Findings: The specimen consists of an irregular piece of tan-white soft tissue that measured 7.0 x 5.0 x 2.5 cm with a stalk-like portion that measures 2.0 x 2.0 x 0.2 cm.

Results: The tumor consisted of bland spindle cell proliferation in an edematous fibrous stroma with fine wispy collagen, with multiple small to medium sized blood vessels. The spindle cell proliferation was evenly distributed without hypo or hypercellular areas or clustering around the vessels. Mast cells were evenly distributed throughout the tumor. The tumor cells showed strong positivity for CD34, diffuse, moderate staining for desmin, focal and moderate staining for smooth muscle actin. Nuclear staining for estrogen receptor was seen in most of the spindle cells and rare spindle cell nucleus showed staining for progesterone receptors. Electron Microscopic Findings: The spindled tumoral cells were in an edematous collagenous stroma. The cells were evenly distributed with absence of cell junctions. The spindle cells showed no basal lamina lining the cells. The cell borders were irregular with a few subplasmalemmal densities. No definitive cell to stroma attachment sites were seen. The cytoplasm showed prominent dilated rough endoplasmic reticulum. Golgi complexes were also seen. Microfilaments were arranged along the long axis of the cytoplasm, but no densities were seen. No pinocytotic vesicles were present.

Conclusion: Primary soft tissue tumors of the penis are rare. In the current classification of soft tissue tumors by the World Health Organization, Cellular angiofibroma also encompasses tumors previously described as angiomyo-fibroblastoma-like tumors described in males. Cellular angiofibroma in males has been previously described in the scrotal-inguinal and perineal region. Other rare locations in males are the anus, testis, lumbar and mid trunk soft tissue. In the largest series of 51 cases by Iwasa et al, there were no tumors arising from the corpus spongiosum. Cellular Angiofibroma shows an immunophenotype that suggests fibroblast/myofibroblast as the cell of origin. In the study by Iwasa CA showed positivity for CD34 in 75 %, SMA in 25%, and desmin in 8% of the male cases. The electron microscopic features of this tumor also confirm that impression. These cells showed predominantly fibroblastic features with the absence of a basal lamina, prominent dilated rough endoplasmic reticulum, golgi complexes and microfilaments. Subplasmalemmal densities and irregular cell contours favored a myofibroblastic feature. No cell to stromal attachment sites were seen. The differential diagnosis to be considered based on the location of the tumor should include angiomyo-fibroblastoma, myointimal proliferation, angiocentric myofibroblastic tumor and perineal nodular induration.

203 APICAL CYTOPLASMIC SEGREGATION: A PECULIAR ULTRASTRUCTURAL FEATURE FOUND IN METANEPHRIC ADENOMA

Masayuki Shintaku, Osaka Red Cross Hospital, Osaka, Japan

Background: In a typical case of metanephric adenoma of the kidney, a peculiar ultrastructural feature was found in the apical cytoplasm of neoplastic cells.

Design: Electron microscopic case examination.

Results: The tumor, measuring about 1.5 cm in diameter, was incidentally found in the right kidney of a 40-year-old woman. It consisted of a dense proliferation of small cuboidal cells forming round tiny tubules, and the apical portion of the cytoplasm exhibited a club-like swelling and protruded into the lumen. Cytoplasmic organelles were poorly developed in this portion, and it was largely occupied by free ribosomes. Cytoplasmic debris containing the same substances floated in the lumen. The morphological features resembled apocrine (decapitation) secretion, but no secretory granules were found.

Conclusion: This finding probably indicates a process in which the disused portion of the cytoplasm is segregated and abandoned into the lumen, and is different from the commonly seen apoptotic or autolytic processes. This finding, which is tentatively termed 'apical cytoplasmic segregation', is probably not a finding specific for this neoplasm but a more universal phenomenon, although it has not been well described, heretofore.

Endocrine

204 EVALUATION OF DIABETIC MACRO- AND MICROANGIOPATHIES BY DIGITAL THERMOGRAPHY

Vasile Anestiadi; *Vasile V. Anestiadi*, Centre for Pathobiology and Pathology, Academy of Sciences, Chisinau, Moldova; *Zinaida G. Anestiadi*, Chair of Endocrinology, Medical University, Chisinau, Moldova; *Ilie T. Tsiple*, Centre for Pathobiology and Pathology, Academy of Sciences, Chisinau, Moldova; *Ion V. Cosciug*, Medical University, Chisinau, Moldova

Background: The objective of this study was to determine the potential value of digital thermography (DT) for the evaluation of macro- and microangiopathies of lower limbs in diabetes mellitus (DM).

Design: We have studied 250 pts with DM, of which 120 male. 100 pts had DM type I, 150 pts had DM type II, with age varying from 27 to 80 yrs, mean age (mean±SEM) was 56.2±6.3 years. Thermograms were acquired at a constant ambient temperature, in fasting state, using an original PC-interfaced thermograph. 2000x150 thermal values were acquired for each study, with a 10-bit depth, subsequently averaged and reformatted to 128x128 square 8-bit images. Analysis included noise and horizontal band filtering of raw data, 14% background cutoff, nine-point kernel image filtering, obtaining x- and y-axis profiles and averaged temperature curves (ATC), determination of local maximums and minimums of the ATCs, definition of anatomic regions, building of regions of interest (ROI), ROI histograms, viewing in 7 color tables.

Results: Five main thermogram patterns were found: 1. asymmetric unilateral hypothermia ($\Delta t = 0.3$ grades Celsius) of 1st toe (in 35% of DM I cases); 2. bilateral symmetrical hypothermia of both feet at the level of distal phalanges (in 25% of DM I cases); 3. unilateral hypothermia of foot ('thermo-amputation'); 4. unilateral hyperthermia of foot and tibial region; 5. focal hyperthermic regions (diameter from 2 to 4 cm.; indicating potential subsequent ulceration). ATCs and symmetric left-right ROI comparisons helped distinguishing between macro- and microvascular disease, between neuro- and angiopathy in DM, evaluating therapy effectiveness. DT was most valuable in surgical cases, permitting (1) to locate the optimum level of amputation and (2) to detect early the inflammation.

Conclusion: DT results in DM correlate well with pathomorphology, and are influenced by DM type, DM duration, and presence of local inflammation.

205 PERSISTENT HYPERINSULINEMIC HYPOGLYCEMIA AND NESIDIOLASTOSIS AFTER BARIATRIC SURGERY

Erin Brooks; *Maureen Harmon*; *Thomas Trainer*, University of Vermont/Fletcher Allen Health Care, Burlington, VT, United States

Background: Persistent hyperinsulinemic hypoglycemia in adults is most commonly attributable to insulinomas. Recently, there have been increasing numbers of patients with radiologic findings negative for insulinoma whose symptoms have improved after partial pancreatic resection. Resected specimens reveal beta cell hypertrophy, increased ductuloinsular complexes, and increased size and/or number of islets—features consistent with nesidioblastosis.

Design: Case report of persistent hyperinsulinemic hypoglycemia with nesidioblastosis post gastric-bypass surgery.

Results: A 44 year old woman with a medical history significant for Roux-en-Y gastric bypass surgery in 1994 and erratic blood sugars presented to the endocrinology clinic. Laboratory studies revealed hypoglycemia, hyperinsulinemia, and elevated c-peptide (glucose 48 mg/dL, insulin 5.5 uIU/ml, and C-peptide 2.8 ng/mL). Abdominal CT revealed no evidence of insulinoma. A calcium stimulation test with sampling of the splenic artery revealed a doubling of insulin levels, suggestive of nesidioblastosis. The patient's C-peptide was also elevated at this time, indicating a hyperinsulinemic state not attributable to exogenous insulin use. Distal pancreatectomy was performed. Gross examination revealed a 11.5 x 3.5 x 1.5 cm tan tissue fragment with no discrete nodules or masses. Microscopic examination revealed foci of prominent ductule-islet complexes as well as focal hyperplasia of islets with minimal nuclear enlargement. Focal mucinous metaplasia of small interlobular ducts was also identified.

Conclusion: Nesidioblastosis is an extremely rare condition that almost never develops in adulthood. We present the case of a woman who was status-post Roux-en-Y gastric bypass, who subsequently developed persistent hyperinsulinemic hypoglycemia and nesidioblastosis. At her one month follow-up after distal pancreatectomy, she reported no further symptomatic episodes of hypoglycemia. Blood sugars were checked 4–6 times per day, with a fasting blood sugar range of 80–90 mg/dL. The frequency of nesidioblastosis