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Cintilografia V/P de alta probabilidade na doença pulmonar venoclusiva (DPVO).

Resumo: Mulher de 49 anos em pós-operatorio tardio de correção de CIA, evoluiu com quadro de dor torácica ventilatório dependente e dispnéia, sendo diagnosticado doença pulmonar venoclusiva (DPVO), gerando um defeito quase total no pulmão esquerdo á perfusão pulmonar.

Descritores: Perfusão; Tromboembolismo; Venoso; Defeito, Doença Pulmonar Venoclusiva.

Objetivo: A CTG V/P é indicada para diagnóstico de TEP por sua capacidade excludente para o mesmo. Neste trabalho apresentaremos um caso de defeito quase total na perfusão do pulmão esquerdo devido a DPVO, uma causa rara para este defeito.

L.M.F.P mulher de 49 anos em PO tardio de correção de CIA no dia com quadro de dor torácica ventilatório dependente há 24H e dispnéia com evolução de algumas horas, evoluindo com melhora clínica após heparinização.

H.P. de TEP. Passado cirúrgico de correção da CIA tipo seio venoso de cava inferior.

Exames realizados: RX de tórax, ECO, TC do tórax.

Método: Gama-câmara Prism 2000XP Picker. CTG V/P realizada com inalação de Fitato-Tc99m 30mCi em nebulizador de sistema fechado, perfusão realizada com injeção EV de MAA-Tc99m 10mCi. Imagens obtidas utilizando colimador de alta resolução, janela de 15% em 140 Kev, imagens adquiridas com 250 cpm (V) e 750 com (P), incidências: A, P, OPD, OPE.

Resultado: CTG V/P 4/3/04. A perfusão pulmonar mostra hipoperfusão difusa de quase todo pulmão esquerdo. Pulmão direito normoperfundido. Ao exame inalatório observam-se pulmões discretamente heterogêneos, sem áreas focais hipoaeradas.

Discussão: Devido a CTG V/P de "alta probabilidade", leve hipertensão pulmonar ao ECO e sintomas moderados da paciente a hipótese de compressão vascular externa ou hemangiomatose capilar pulmonar foi solicitado TC do tórax com diagnóstico de DPVO. A DPVO é rara mas é sabidamente uma causa de hipertensão pulmonar. O prognóstico do DPVO é usualmente pobre, com severa, progressiva hipertensão levando a falência do ventrículo direito usualmente após 2anos do diagnóstico. Opções para terapia que não o transplante de pulmão tem sido desapontadoras.

A presença de defeito total ou quase total na CTG V/P se deve ao aumento da resistência ao fluxo sanguíneo reduzindo a deposição do radiotraçador nos capilares amontante á oclusão ou/e estreitamento da luz venosa pulmonar.

Conclusão: Quando CTG V/P de alta probabilidade para TEP, com paciente em hipertensão pulmonar e exames morfológicos não demonstrando obstrução arterial, este achado é provavelmente um processo de aumento da resistência ao fluxo sanguíneo causado por obliteração e/ou constrição das veias ou vênulas pulmonares como a DPVO.

Sessão de Painéis: Radiobiologia

10-INDUCTION OF MICRONUCLEUS BY [DOTA, TYR3]OCTREOTATE LABELED WITH 131I AND 177LU IN PERIPHERAL BLOOD LYMPHOCYTES IN VITRO

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The use of radiolabeled somatostatin analogue is of great interest in nuclear medicine for diagnostic and therapy of neuroendocrine tumors. A somatostatin analogue [DOTA, Tyr3]octreotate has been used because of its high affinity for somatostatin subtype receptors sstr2 and sstr5. The pharmacokinetic study showed that the blood clearance is rapid and only 9% of the intravenous injected activity remains in blood after one hour. In this study, we evaluated the cytogenetic damage in peripheral blood lymphocytes of healthy donors exposed to different radioactive concentration of [DOTA, Tyr3]octreotate labeled with 131I (n=3) and 177Lu (n=2), range between 600 and 4700 kBq/mL, that correspond to an injected activity of 3.1 to 24.4 GBq (83 to 660 mCi) in a reference man with 70kg weight. 131I emits gamma rays with 365 and 637 keV and beta particles of Emax 495 keV with a physical half-life of 8.1d and 177Lu emits gamma rays with 113 and 208 keV and beta particles of Emax 600 keV with a physical half-life of 6.7d. Cytokinesis-block micronucleus (MN) assay was applied in total peripheral blood cells after one hour of exposure at 37oC, washing three times with RPMI 1640 medium to remove labeled octreotate. The results obtained indicated significant correlations between radioactive concentrations (X) and the frequency of micronuclei in binucleated cells (Y) ($P<0.05$). The equation for [131I-DOTA, Tyr3]octreotate was Y = (0.01841 0.002880) + (0.9946 0.1452) 10-5 X and for [177Lu-DOTA, Tyr3]octreotate was Y = (0.01641 0.001641) + (0.5404 0.04642) 10-5 X. Comparing the slopes (Y = a + bD), [DOTA, Tyr3]octreotate labeled with 131I was more damaging than that labeled with 177Lu ($P<0.05$). One of the limiting factors in radionuclide therapy is the dose absorbed by normal tissues. The higher genotoxic effect in lymphocytes exposed to 131I compared to 177Lu could be the consequence of differences in ionization field caused by gamma and beta particles. The dose-response curve allowed us to measure the genotoxicity of these compounds in peripheral blood lymphocytes and will help us to check the absorbed dose in peripheral blood of patients, analyzing the MN frequency before and after treatment.

12 - CYTOGENETIC EFFECTS OF 131I ADMINISTERED WITH RECOMBINANT HUMAN THYROTROPIN HORMONE (REC-HTSH) ON BLOOD LYMPHOCYTE OF WISTAR RAT

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The large application of 131I for diagnostic and therapeutic purposes is essentially due to its preferential thyroid uptake, which is related to the gland activity in physiological and pathological thyroid conditions. Despite the recognized efficacy of various radionuclides used in nuclear medicine, there is little information about the cytogenetic effects of b emitter radionuclides. The aim of the present study is to analyze the cytogenetic effect of 131I preceded by the administration of recombinant human thyrotropin hormone (rec-hTSH produced by IPEN – CNEN/SP) in animal model, using the chromosome aberration technique. Rec-hTSH is a glycoprotein administered in patients submitted to thyroidectomy as an alternative to thyroid hormone withdrawal in order to increase TSH level and, consequently, 131I uptake by metastatic tissue, still maintaining their euthyroid condition and quality of life. There are no data about the cytogenetic effect of prolonged exposure to 131I preceded by rec-hTSH in animal as well as in human being. Wistar rats (SPF females, weighing ~ 200 g) were divided in two groups: one group of animals was treated with 131I only (11.1 MBq, by gavage) and the other group received rec-hTSH (1.2 mg, by intramuscularly injection) 24h before the administration of 131I. The blood samples were collected via orbital plex before the treatments (basal), 24 hours and 7 days later. The cytogenetic analysis showed an increase in chromosome aberration 24 hours and 7 days after the administration of 131I with or without rec-hTSH, compared to basal values, although the difference was not found significant ($p>0.05$). There was also no difference ($p>0.05$) between the chromosome aberration rate in blood samples collected after the administration of 131I only and those preceded by rec-hTSH. The use of an animal model can provide important informations about the relation between the therapeutic exposure to the radionuclide and its genotoxic potential.

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30 - EXPOSURE TO RADIATION OF NURSING ASSISTANTS DURING IODINE THERAPY IN A PERIOD OF ELEVEN YEARS

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Objectives: To evaluate radiation exposure of nursing staff attending hospitalized patients under 131 I therapy from 1993 to 2003.

Materials and Methods – The records of three nurse assistants in charge of hospitalized patients under iodinetherapy from 1993 to 2003 (eleven years) were analysed.

Dosimetrics films were used for external individual monitoring from 1993 to 1999, wich were provided by the Radiological Protection Laboratory, Department of Nuclear Energy of the Federal University of Pernambuco. Thermoluminescent dosimeters were used from 2000 to 2003, provided by Sapra Landauer Ltda.

The mean activity increased from 1,30 x 10 5 MBq/year (3527mCi/year) to 2,98 x 10 5 MBq/year (8071 mCi/year).

During this time, the nursing staff received guides about radiological protection factors: permanence time in the therapeutic room, use of appropriated distance and shielding procedures.

Results: From 1993 to 1999 (