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Review Article

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[Investigation of radiation attenuation parameters of some drugs used in Chemotherapy in Wide Energy Region](#)

Objectives: The aim of this study is to compute the radiation attenuation parameters such as mass attenuation coefficient, linear attenuation coefficient, half value layer, mean free path, and effective atomic number for some selected chemotherapy drugs such as Lomustine, Cisplatin, Carmustine, and Chlorambucil in the energy range from 1 keV to 100 GeV.

Materials and Methods: The mass attenuation coefficients were calculated with the help of WinXCOM program. Using the obtained mass attenuation coefficients, other parameters such as linear attenuation coefficient, half value layer, mean free path, and effective atomic number were derived.

Results: It is observed that the variations of these parameters with respect to the photon energy show changes in different energy regions. According to the obtained results, Cisplatin has the highest mass attenuation coefficient, linear attenuation coefficient and effective atomic number results among the selected chemotherapy drugs. Moreover, Chlorambucil has the highest half value layer and mean free path results among the selected chemotherapy drugs.

Conclusion: The results of this study are useful for applied science fields such as radiation physics, pharmacology, and medical physics. These results may be useful when the selected chemotherapy drugs are used together with radiology.

Research Article

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[Clinically and Radiological isolated syndrome \(MS risk\)](#)

Background: The use of brain magnetic resonance imaging (MRI) for evaluation of neurological disorders has increased in the past two decades. This has led to an increased detection of incidental findings on brain MRI. The most common of these asymptomatic abnormalities are white matter lesions that are interpreted as demyelinating based on radiological criteria. However, in the absence of associated clinical symptoms suggestive of multiple sclerosis (MS), a definite diagnosis of MS can't be made in patients with these incidental white matter lesions. These patients are diagnosed as CIS (clinically isolated syndrome) and RIS (radiologically isolated syndrome). Using the revised McDonald criteria now allows some patients who would have been diagnosed with CIS to be diagnosed as having MS before a second episode.

Method: Sixty one patients, 40 females and 21 males, age ranged between 15 years and 58 years, were included in our study. In addition to a detailed medical and neurological history and examination, CSF and blood analysis for oligoclonal bands and IgG index were performed for all patients.

Result: 41 patients had positive oligoclonal bands and IgG index. After clinical, MRI results and laboratory results 44 (72.1%) were diagnosed CIS and 17 (27.9%) were RIS.

Conclusion: Diagnosis of MS not depend only on MRI finding but need clinical and laboratory work up including CSF and blood analysis for oligoclonal bands and IgG index to confirm diagnosis.

Case Report

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[Incidental findings in traditional nuclear medicine practice](#)

The presence of an incidental finding, defined as an abnormality which is unrelated to the initial scanning indication, is widely increases due to the access to new devices and imaging modalities. This growing number of incidental findings can lead to additional medical care including unnecessary tests nevertheless, in a minority of patients, can lead to diagnosis of an important and unexpected condition that could be crucial for the patient. We reported three cases in which nuclear medicine imaging, performed for different reasons and showed a relevant and unexpected pathology. In the case 1, a bone scan, performed in a 66 aged woman for breast cancer staging, allowed the diagnosis of a uterine fibroma. In the case 2, a HMPAO labeled-WBC scintigraphy performed because of a suspect of osteomyelitis, showed a remarkable heart-shaped photopenic area, highly suggestive of cardiac global dilatation. In the case 3, a 62 aged man referred to bone scintigraphy for the staging of recent diagnosed lung cancer. The bone scan allowed the diagnosis of a meningioma. Therefore, the occurrence of incidental findings could lead to reveal relevant abnormalities for the diagnostic pathway.
