Editorial: The Controversy About the Nuclear Medicine Investigation of Neuroblastoma

Iodine-131 metaiodobenzylguanidine ([^{131}I]MIBG) was first described in 1983 (*1*). It was rapidly and enthusiastically adopted for both the investigation and therapy of neuroblastoma in children. Prior to this the technetium-99m methylene diphosphonate bone scan (^{99m}Tc-MDP) (*2*) was used to determine whether a child had skeletal involvement by neuroblastoma. The problem with ^{99m}Tc-MDP bone imaging was that the studies required great care to avoid false-negative interpretations even though the skeletal lesions have a significant lesion-to-background activity level (*2,3*). It was because of this and the generally poor ability to detect soft-tissue or marrow neuroblastoma lesions that ^{131}I or [^{123}I] MIBG was so quickly adopted.

In this issue of the *Journal of Nuclear Medicine*, Gordon et al. (*4*) brings a strong concern forward about the use of MIBG imaging as the sole test for the detection of skeletal neuroblastoma lesions. They investigated 44 children with neuroblastoma with both [^{123}I] MIBG and ^{99m}Tc-MDP scans and bone marrow examinations all within four weeks of each other. They found that although [^{123}I]MIBG revealed more extensive skeletal disease than ^{99m}Tc-MDP, none of those patients had normal bone scans. On the other hand, five patients had normal [^{123}I]MIBG with abnormal ^{99m}Tc-MDP studies of the skeleton. They concluded that ^{99m}Tc-MDP imaging should be the mainstay of skeletal investigation as [^{123}I]MIBG underestimates skeletal involvement.

Hoefnagel et al. (*5*) have shown that MIBG imaging detected 39/41 patients with neuroblastoma. However, they did not compare their results to ^{99m}TC-MDP bone scans nor did they correlate their positive results with the staging of the disease. The relevance to the actual initial and follow-up evaluation of children with neuroblastoma is reduced as no knowledge of the presence or absence of bone involvement is identified.

In view of the current concerns both pro and con on the use of [^{123}I]MIBG imaging in neuroblastoma, the correlative report by Gordon et al. (*4*) is timely. The importance of this report is that the use of MIBG as the sole means of investigation of skeletal neuroblastoma involvement would miss a significant number of children (10%, 5/44), who should be treated for skeletal involvement. However, we must remember that soft-tissue involvement is best detected by MIBG. Therefore all children with a diagnosis of neuroblastoma must have both the [^{123}I]MIBG and ^{99m}Tc-MDP imaging to stage and monitor their neuroblastoma involvement.

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