The use of $^{131}$I-MIBG in neuroendocrine tumours

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Neuroendocrine tumours are often troublesome to the patient and difficult to treat. They may cause the patient problems due to hormone over production as is seen in a phaeochromocytoma or tumour mass may result in organ failure. The tumours may present late and often untreatable by surgery and they do not respond to chemotherapy. Though it is accepted that the main form of radionuclide therapy for these patients uses radiolabelled somatostatins such as Lu-177 or Y-90 DOTATATE there are some patients whose tumour do not express the correct receptors. It has been found that some of these somatostatin negative tumours have uptake of I-123/I-131 MIBG. Therefore it is logical to consider treatment with high activity I-131 MIBG. This is commonly the case of patients with phaeochromocytomas, paragangliomas and some mid gut carcinoids.

It is not know how much I-131 MIBG should be given but there is evidence that for adults with a neuroendocrine tumour at least 15GBq should be administered in two to three divided doses. For phaeochromocytomas much higher activities such as 7-11GBq every 6 months may be needed.

To enable these activities to be given safely semi-automated administration systems have been developed to reduce the operator’s radiation dose. After treatment patients tend to stay in a shielded room for 3-7 days.

At present there is no clear evidence that dosimetry is useful in adults though it may have a role ion the treatment of neuroblastoma in children.

Overall it can be expected that about 60% of patients will have a prolonged benefit for I-131 MIBG treatment in terms of reduction of symptoms and stopping tumour growth.

Further Reading