

Preliminary Experience in Radionuclide Therapy of Hepatocellular Carcinoma Using Hepatic Intra-arterial Radio-conjugates

G H W Keng,*^{MBBS, FRCR (UK)}, F X Sundram,**^{FAMS, MSc (Nucl Med), DMRT (Lond)}, S W K Yu,***^{PhD, MRPS}, S Somanesan,****^{BSc (Hons)}, J Premaraj,[†]^{FAMS MBBS, FRCS (Edin)}, C J Oon,[‡]^{FAMS, MD, FRCP}, R Kwok,[§]^{FAMS, MBBS, FRCR (UK)}, M M Htoo,[¶]^{MRCP (UK), DMRD (Lond), FRCR (UK)}

Abstract

Introduction: In a minority of the cases, resection of hepatocellular carcinoma (HCC) is potentially curative but local recurrence is common. Adjuvant intra-arterial radio-conjugate therapy could potentially reduce the rate of local recurrence and increase disease-free and overall survival. However, in the majority of cases, treatment of HCC is largely palliative. A wide range of palliative treatment options are available and these include external radiation, hepatic intra-arterial chemo-embolisation, systemic chemotherapy and percutaneous ethanol injection. The long-term survival rate is poor. Hepatic intra-arterial radio-conjugate therapy provides a new and promising means of palliation. **Materials and Methods:** We share our initial experience in the treatment of patients with HCC. A total of 32 patients were recruited between October 1999 and June 2001. Group 1 comprised 15 patients who had potentially curative resection of HCC who were treated with Iodine-131 (I^{131}) lipiodol as a form of adjuvant therapy. Group 2 comprised 17 patients with unresectable HCC, 12 of whom were treated with Yttrium-90 (Y^{90}) microspheres and 5 with Rhenium-188 (Re^{188}) lipiodol. The radio-conjugates were administered via the intra-arterial route. **Results:** Thirteen of the 15 patients in group 1 who were treated with I^{131} lipiodol following curative resection of HCC were free of disease, 1 patient died and 1 patient who developed recurrence was retreated with Re^{188} lipiodol and was subsequently free of disease. The 6-month disease-free survival rate was 100% and the 12-month disease-free and overall survival rates were 72% and 85%, respectively. Of the 12 patients in group 2 who were treated with Y^{90} microspheres for unresectable HCC, 6 had stable disease, 2 showed tumour regression and 4 died. The 6-month and 12-month survival rates were 75% and 66%, respectively. Of the 5 patients in group 2 who were treated with Re^{188} lipiodol for unresectable HCC, 4 had stable disease and 1 had regression of the right lobe tumour but progression of the left lobe tumour. **Conclusion:** Our results in the adjuvant treatment of patients with I^{131} lipiodol following curative resection of early HCC and in the palliative treatment of unresectable HCC using Y^{90} microspheres and Re^{188} lipiodol are preliminary and not fully conclusive. These preliminary results have to be confirmed in larger groups of patients and by prospective, randomised, controlled trials. This study highlights the preliminary experience in radionuclide therapy of HCC using hepatic intra-arterial radio-conjugates in a local context.

Ann Acad Med Singapore 2002; 31:382-6

Key words: Iodine-131, Lipiodol, Rhenium-188, Yttrium-90 microspheres

* Registrar

** Head and Senior Consultant

*** Radiopharmacist

**** Radiation Physicist

Department of Nuclear Medicine

¶ Senior Consultant

Department of Diagnostic Radiology

Singapore General Hospital

† Senior Consultant Surgeon

§ Senior Consultant Radiologist

‡ Senior Consultant Medical Oncologist

Mount Elizabeth Medical Centre

Address for Reprints: Dr F X Sundram, Department of Nuclear Medicine, Singapore General Hospital, Outram Road, Singapore 169608