total body irradiation and this enzyme changes may lead to functional alterations. On the basis of experience from conventional radiotherapy it seems possible that coronary artery disease or myocardial infarction may occur at an earlier age than normal in this patient population (77).

Second tumour induction

In the first year or two after bone marrow transplantation, the commonest malignancies seen are recurrence of the original disease or lymphoproliferative disorders which seem to be related to immune suppression and Epstein Barr virus infection (78).

A large study from the Seattle Group and the International Bone Marrow Transplant Registry has followed nearly 20,000 patients treated with bone marrow transplantation to determine the risk of the new solid cancer. 9,501 patients survived longer than 1 year and 73% of the patients had had TBI as part of the initial conditioning for BMT. 3,200 patients have survived for 5 years or more and in this group 80 second tumours were diagnosed These included 17 carcinomas of the buccal cavity or pharynax, 11 brain tumours, 11 melanomas, 8 thyroid carcinomas, tissue tumours. The overall risk of developing a second tumour was inversaly related to the age at the time of bone marrow transplant and directly related to time since treatment, original tumour type and dose of radiation (79).

Risk in children treated before the age of 10 was increased 36.6 times and as age 20-29 4.6 times, whereas over the age of 39 the risk was nearly the same as in a normal population. Cumulative incidence was 0.7% at 5 years, 2.2% at 10 years and 6.7% at 15 years. Patients with ALL were most likely to develop brain tumours whereas melanoma occurred more often in those treated for AML. Patients treated with thoracoabdominal or total body irradiation had a higher risk than those conditioned without radiation. No difference was seen whether TBI was given as a single fraction on in several fractions. The risk of brain tumours was highest in those who had received cranial as well as total body irradiation (4 of the 13 patients with brain tumours).

Other factors which are possibly associated with increased risk may be determined by immunological abnormalities: T cells depletion possibly related to melanoma induction, immune abnormalities with oral mucositis and chronic graft versus host disease for buccal cavity tumours, cyclosporin administration (for skin tumours), papilloma virus infection i squamous cell carcinomas of skin and buccal mucosa. Buccal cavity tumours observed were muco-epidermoid carcimonas – the type also observed in survivors of the atomic bomb.

It is interesting to compare this patteren of second tumour incidence with that seen after treatment of leukaemia without bone marrow transplant when the cumulative incidence of second tumours at 20 years is 2.9-4%. A similar pattern of brain, thyroid, skin, and connective tissue tumours occurs, but the greatest risk (27 times expected) is of brtain tumours in those treated with cranial irradiation (80).

These date underline the risks of radiation and the need for prolonged follow-up. Patients should be encouraged to avoid exposure to known carcinopgens (such as tobbaco) which may potentiate the effects of radiation.

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NEW ADVENCES IN BIOLOGY AND MODERN TREATMENT OF HODGKIN'S DISEASE

Volker Dieh

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LOCALISED AND ADVANCED HODGKIN'S DISEASE: TOWARD A COMMON STRATEGY? AN EORTC LYMPHOMA GROUP POINT OF VIEW

Patrice Carde

Paryż

In patients with localised Hodgkin's disease (HD), the EORTC initiated in 1975, with the H5 trial a completely new strategy consisting in adapting treatment intensity (NCI Monographs 6: 303-310,