appears to increase the risk for NHL. HCV associated NHL has similar clinical characteristics to HCV−ve disease. The response to therapy is the same, with CR achieved equally. The addition of IFN to standard CHOP did not significantly increase the response rate, but decreased significantly hepatic side effects. Further cohort studies are needed to evaluate the risk of development of NHL in the natural history of HCV infection.

1214 POSTER

Thyroid toxicity after treatment of Hodgkin's disease

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Purpose: Thyroid disease, especially hypothyroidism, is a possible late toxicity after therapy for Hodgkin's disease (HD). We analysed the thyroid function of patients (pts) who were treated for HD according to the protocols of the German Hodgkin Study Group between 1970 and 1994 at two University centres.

Methods: 177 pts (92 men and 85 women) with median age of 38 years (range 18–74) and median time after therapy of 6 years (range 1–20) were studied. 35 pts (20%) were treated with chemotherapy alone (mainly COPP/ABVD), 44 (25%) with radiotherapy alone and 98 (55%) received combined modality. All pts were without evidence of HD for at least one year. They were evaluated for symptoms of thyroid disorder, biochemical thyroid-parameters and ultrasound imaging.

Results: Overall 48 pts (27%) were found to have subclinical (20%) or overt (7%) hypothyroidism. None of the pts with chemotherapy alone developed hypothyroidism, but 36% of pts with supradiaphragmatic radiotherapy and 34% of pts with combined supradiaphragmatic radiotherapy and chemotherapy. All pts with infradiaphragmatic radiation alone were euthyroid except one pat with hemithyreoidectomy.

Conclusions: Supradiaphragmatic radiation is associated with a distinctively increased risk of hypothyroidism, chemotherapy neither alone nor in combined modality seems to enhance the risk of hypothyroidism.

1215 PUBLICATION

Prognostic factors in low grade NHL (A multivariate analys)

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During the period between January, 1970 and December, 1989 inclusive 278 newly diagnosed low grade NHL patients were treated and followed up at the RMH, England. The median survival and PFS was 8.75 years and 2.5 years respectively (median follow up = 8 years).

By univariate analysis, age (60 years), stage (III and IV), moer than 2 sites of disease, extranodal disease, anaemia, B-symptoms, bone marrow involvement, ESR > 40 mm/h and chemotherapy treatment were adverse prognostic factors affecting survival.

By multivariate analysis, more than 2 sites of disease, age (60 years) and anaemia remained as significant adverse prognostic factors. For PFS, old age, advanced stage, more than 2 sites of disease, extranodal disease, bone marrow involvement, liver involvement, anaemia and chemotherapy treatment were univariate adverse prognostic factors.

By multivariate analysis more than 2 sites of disease and extranodal disease remained significant.

Treatment modality does not have any further significance as a prognostic factor A pattern of continuous late relapse has been characteristic of low grade NHL.

Potentially curative treatment strategies are needed and require prospective evaluation Only with designed clinical trials can a significant survival plateau be realized.

1216 PUBLICATION

Importance of surgery in the treatment of non-Hodgkin's lymphoma of the stomach

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Purpose: Although rising incidence of non-Hodgkin's lymphoma (NHL) of the stomach could be obtained worldwide in the last years optimal treatment options remain controversial, above all the role and extent of surgery in low as well as in high grade malignancies.

Methods: Between 1969 and 1996 the postoperative course of 105 pts was analyzed retrospectively in regard to the complicationrate and long term survival depending on tumor stages as well as multimodulity treatment.

Results: The overall incidence of NHL-pts who underwent surgical treatment was 4.2% (105/2475 pts); increasing to 8% in the last decade. In 93.3% (98/105 pts) total or subtotal distal gastrectomy could be carried out with an operative mortality of 7%. The pathohistological staging determined CSI = 49, CSII = 31 and CSIV = 25; 5-year survival rate obtained for these stages was 94%, 64% and 35% resp. (p = 0.002). Compared to surgical treatment alone no statistically improved benefit was obvious after post-operative radio- and/or chemotherapy.

Conclusion: Based on the data obtained the most reliable therapy of gastric NHL is still surgery. Nevertheless, promising results of anti-H. pylori therapy of superficial low grade malignant NHL or chemo-/radiotherapy in CSI/II high grade malignant NHL must be investigated in further trials.

1217 PUBLICATION

Treatment of relapsing and refractory non-Hodgkin's lymphoma with a combination of dexamethasone, Ara-C, ifosfamide and cisplatin (DAIP)

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Purpose: To evaluate the efficacy and toxicity of a novel combination of dexamethasone (D), Ara-C (A), ifosfamide (I) and cisplatin (P) – DAIP – in patients (pts) with non-Hodgkin's lymphoma (NHL) previously treated with both adriamycin and etoposide.

Methods: All medications were given over 4 consecutive days. D (40 mg/day), I (max. daily dose 1,200 mg/m^2) and P (max. daily dose 20 mg/m^2) were given by IV bolus. A (max. daily dose 75 mg/m^2) was given by 1 hr IV infusion. Cycles were repeated every 3 wks. Adequate hydration and mesna were given.

Results: 30 pts (23 aggressive NHL, 6 low-grade NHL, 1 mantle cell) were entered in the study. Median age was 50 yrs (range, 19–69). The most common prior therapy was ProMACE/MOPP (18 pts). Nine pts received ≥2 prior combinations. Consolidation with high-dose chemotherapy (HDCT) was given to 6 pts. Complete response (CR) was achieved in 10 pts (33%) and partial response (PR) in 6 (20%). Median duration of PR was 4 mos; that of CR was not reached. Three pts were disease-free at 6+, 47+ and 55+ months. CR rate was higher in relapsing pts than in refractory pts (9/13 vs 1/17). Median WBC nadir was 1,050 mm^3 and median platelets nadir was 26,000/mm^3. Neutropenic fever developed in 13 pts (43%) and platelets transfusions were required in 6 (20%). There was one treatment-related death with sepsis and GIT bleeding.

Conclusion: DAIP is an active combination in relapsing NHL following prior exposure to adriamycin and etoposide and may be used before HDCT. Myelosuppression is the dose-limiting toxicity.

1218 PUBLICATION

Inverse relationship between apoptotic fraction and volume weighted mean nuclear volume in childhood Burkitts versus diffuse B/T large cell lymphoma

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Purpose: Nuclear apoptosis results in nuclear size reduction and if present may cause the average nuclear appearance in histological sections to vary within lesions of the same lineage, complicating morphological classification. The accurate apoptotic fraction in most lesions is presently not appreciated.

Methods: We studied diagnostic pre-treatment tissue samples of 28 consecutive, unselected childhood MNHL (13 Burkitt's, mean age 8 y, range 4 y 2 m–14 y, 7 M, 6F; 15 diffuse large cell lesions, mean age 9 y 9 m, range 1 y 5 m–16 y 8 m, 10 M, 5 F) for volume weighted mean nuclear volume by image analysis (Quantimet 570C) and for mean apoptotic fraction using Frag-EL DNA in-situ labelling (CalBiochem, USA). Lesions were typed as B-T cell using either immuno-cytochemistry, flow cytometry or immunoglobulin/T-cell receptor gene re-arrangements.

Results: Volume weighted mean nuclear volume of Burkitt's lymphoma (mean 250, range 134–411 μm^3) was smaller than that of large cell diffuse lesions (mean 285, range 168–489 μm^3). However this difference is based on selective increase of B-cell lesions only (n = 7, mean 350, range 260–489 μm^3) in contrast to T-cell lesions (n = 8, mean 228, range 168–350 μm^3). Conversely, mean apoptotic fraction of large cell, B-cell lesions (40.2, range