Reticulin fibre content of bone marrow infiltrates of malignant non-Hodgkin’s lymphomas (B-cell type, low malignancy) – a morphometric evaluation before and after therapy

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Summary. A morphometric study was performed on bone marrow infiltrates of non-Hodgkin’s lymphomas (B-cell type, low malignancy) to evaluate the content of argyrophilic (reticulin) fibres in the various subtypes before and after therapy. In congruence with the corresponding lymph node lesions, subtypes consisted of lymphocytic lymphoma – chronic lymphocytic leukaemia (CLL, n = 39), centroblastic-centrocytic lymphoma (CB-CC, n = 35), lymphoplasmacytoid immunocytoma (LPI, n = 22) and finally hairy cell leukaemia (HCL, n = 21). In comparison with control specimens, morphometric measurements on trephine biopsies (initial staging procedure) disclosed a borderline or minimal increase in reticulin in CLL and moderate fibrosis in CB-CC and LPI, whereas HCL had the greatest increase in fibres. The marrow surrounding focal or patchy lymphoma infiltrates of CLL and CB-CC displayed no relevant changes in fibre density with respect to the control samples. Following chemotherapy, repeated trephine biopsies (re-staging procedure) were obtainable from 38 patients. There was no significant decrease in the fibre content of CLL, CB-CC and LPI infiltrates. In HCL an incomplete reduction was recorded after interferon treatment. So-called benign lymphoid lesions may be distinguished from focal-patchy infiltrates of CB-CC and LPI not only by showing a central localization, but also by the absence of significant amounts of reticulin. However, considering the density of the reticulin fibres, a clear-cut discrimination of these lymphoid aggregates from an early nodal-central growth pattern of CLL is not feasible in many cases.

Key words: Argyrophilic (reticulin) fibres – Malignant non-Hodgkin’s lymphomas – Bone marrow infiltrates – Benign lymphoid lesions – Morphometry

Introduction
In malignant non-Hodgkin’s lymphomas (NHLs) bone marrow infiltrates have been studied extensively with respect to their cytological and immunohistological features. Classification into different subtypes associated with various growth patterns and with prognostic implications have been made (Georgii 1979; Bartl et al. 1982, 1984, 1988; Vykoupil and Georgii 1984; Han et al. 1984; Rozman et al. 1984; Frisch et al. 1985; Pangalis et al. 1987; Montserrat and Rozman 1987; Paoletti et al. 1988; Orfao et al. 1988, 1989; Lerma-Puertas et al. 1988; Frisch and Bartl 1988). Although some degree of marrow fibrosis has been described as accompanying these lymphoma infiltrates, no exact data are available (Bartl et al. 1982, Burkhardt et al. 1982; Navone and Colombano 1984; Frisch et al. 1985; Frisch and Bartl 1988). In the small cell NHLs of low or intermediate malignancy in particular, it might be assumed that evolution of reticulin fibres could be expressed differently in each subgroup. In this context it is also questionable whether argyrophilic fibres are induced in the surrounding non-involved marrow area. Furthermore, effects of cytotoxic therapy on reticulin fibrosis have been determined only in hairy cell leukaemia by several groups who have used gross quantifications or employment of a scoring system (Naeim and Jacobs 1985; Bardawil et al. 1986; Hasselbalch et al. 1988; Laughlin et al. 1988). It is also tempting to speculate that discrimination between small focal lymphoma infiltrates and so-called benign lymphoid nodules of the bone marrow (Frisch et al. 1982; Burkhardt et al. 1982; Navone et al. 1985; Faulkner-Jones et al. 1988) may be facilitated by considering the fibre content of these lesions in addition to immunohistochecmistry (Frisch et al. 1985; Hall et al. 1988). For this reason, the aim of this study was to provide a comprehensive survey on argyrophilic (reticu-
Fig. 1 a-e. Argyrophilic (reticulin) fibres in bone marrow infiltrates of non-Hodgkin’s lymphomas (NHLs) in comparison with a control specimen. a Normal bone marrow with scanty and thin reticulin fibres. b Chronic lymphocytic leukaemia (CLL) showing diffuse involvement and an only borderline increase in thin argyrophilic fibres. c CLL displaying a focal-patchy infiltrate (arrowheads) with a minimal amount of fibres. d Centroblastic/centrocytic lymphoma (CB-CC) with diffuse growth pattern and a conspicuous argyrophilic fibrosis consisting of irregularly arranged thick fibres. e CB-CC exhibiting a focal paratrabeicular (endosteal) infiltrate (arrowheads) with a striking increase in thick reticulin fibres. a–e Silver impregnation after Gomori, × 370