baseline from each patient, that is, before administering any drugs. Two hundred cells (PBMCs) were evaluated using each fluorescent probe, and the results were expressed as the percentage of nuclei with an abnormal signal pattern for any probe and corresponding chromosomal anomaly. Cytogenetic analysis was by FISH, using methods suited for CLL (287).

For the purposes of cytogenetic analysis, survival data from all 235 subjects were pooled, and then separated into three different curves. The three curves appear in a Kaplan–Meier plot in the original journal article. The three curves did not correspond to different treatments but, instead, they corresponded to the cytogenetics of the leukemia. Thus, the three different curves corresponded to subjects where blood cells contained: (1) the del(17p13.1) chromosomal abnormality; (2) the del(11q22.3) chromosomal abnormality; and (3) other chromosomal abnormalities. The results were as follows. The median PFS was 10.8 months for patients with del(17p13.1) and 21.5 months for those with del (11q22.3). But median PFS was more favorable in the group of subjects not having either of these chromosomal abnormalities.

In comparing PFS of patients with these two chromosomal abnormalities with PFS of patients without these chromosomal abnormalities, the authors concluded that each of these two chromosomal abnormalities is prognostic of poor outcome. The authors went a step further, by using these results to recommend that alternative treatments should be pursued for patients with del(17p13.1) or del(11q22.3). These alternate treatments include use of alemtuzumab, flavopiridol, and stem cell transplantation.

This concerns semantics. In view of the heterogeneous nature of B-cell CLL, this disease has been classed according to cytogenetics, for example, whether the blasts have del(17p13.1) cyotogenetics or have del(11q22.3) cytogenetics. But sometimes, del(17p13.1) and del(11q22.3) are called biomarkers. The question of whether a given deletion is used to define a given type of CLL or is used to refer to a biomarker, is a matter of personal preference.

VIII. MINIMAL RESIDUAL DISEASE

Minimal residual disease (MRD) is a parameter used mainly in clinical trials of hematological cancers. The RECIST criteria, used as an endpoint in clinical trials on solid tumors, finds a counterpart in MRD. But unlike RECIST criteria, which is *not* often a reliable predictor of clinical response, MRD has been found to be an *excellent predictor* of clinical response in the hematological cancers (288).

MRD is a parameter used mainly in clinical trials in leukemia and lymphoma. This parameter is used in about 12% of all clinical trials of leukemia or lymphoma (289). MRD is also used in clinical trials in breast cancer, neuroblastoma, and ovarian cancer. But MRD is used only rarely in clinical trials in MDSs, melanoma, lung cancer, sarcoma, and colorectal cancer.

[287]Dewald GW, Brockman SR, Paternoster SF, et al. Chromosome anomalies detected by interphase fluorescence in situ hybridization: correlation with significant biological features of B-cell chronic lymphocytic leukaemia. Br. J. Haematol. 2003;121:287–95.

[288]Hedrick EE. Personal communication, March 2, 2011.

[289]Search of articles in *Journal of Clinical Oncology*, published between 1990 and 2011. The search was conducted on March 7, 2011.