The major aims of imaging in esophageal cancer are to distinguish between locoregional and systemic disease (M-stage), to determine local tumor extension (T- and N-stage), to assess response to chemo- or chemoradiotherapy and to identify recurrence of cancer. The sensitivity of computed tomography (CT) for detection of distant metastases ranges between 90%. In esophageal cancer, F-18-fluorodeoxyglucose positron emission tomography (FDG-PET) has been shown to detect metastatic disease in approximately 20% of patients who are considered as having only locoregional disease on CT. In locoregional pretherapeutic tumor staging, FDG-PET specificity of 80% is sufficient, but FDG-PET sensitivity of 50% is rather low. However, the initial staging of regional lymph nodes is less important because at the moment there is no pretherapeutic therapy stratification based on lymph node category. The accuracy for correct identification of recurrence in esophageal cancer is higher for FDG-PET than for CT scan. Unfortunately until today no reliable essays for prediction of response or prognosis exist for esophageal cancer in clinical practice for patients with neoadjuvant treatment. Thus the identification of parameters predicting response and/or prognosis is crucial for the future. Post-therapeutic assessment of tumor response by FDG-PET has been shown to correlate with histopathologic tumor regression and patient survival. Furthermore, quantitative
measurements of tumor FDG-uptake may allow an early metabolic response evaluation after only 2 weeks of therapy. An association of metabolic response with histopathologic tumor regression and patient outcome 2 weeks after initiation of preoperative chemotherapy may be shown for esophageal cancer.