Materials and Methods

Patients

We retrospectively analyzed the medical records of 91 patients who were followed between January 2005 and September 2017 with a diagnosis of primary (n = 59) or recurrent (n = 32) KS. All patients had KS diagnosed clinically and histopathologically confirmed. Demographic features (age at diagnosis and sex), clinical characteristics (localization and duration of the lesions, extracutaneous involvement, comorbidities including hypertension, diabetes mellitus, heart failure and pretibial edema, concomitant second primary malignancy, subtype of KS), histopathological findings, treatment modalities, follow-up, date of death or last follow-up (if date of death unknown), prognosis, and outcome were retrieved from computerized medical records. The date of diagnosis was defined as the date of biopsy. The duration of the lesion was defined as the time between the first appearance of the lesions and the date of diagnosis. Ethics approval was obtained from the local ethics committee (**Fig. 1**).

Histopathology

The histopathological diagnoses of all KS cases were confirmed with hematoxylin and eosin slices, and immunohistochemical analysis. The following criteria have been used to determine the histological stages. In the “patch” stage, thin-walled vascular spaces are visible in the upper dermis with a sparse mononuclear cell infiltrate of lymphocytes, plasma cells, and macrophages. In the “plaque” stage, the vascular spaces increase in number, the inflammatory infiltrate is more dense, and spindle cell bundles accumulate around the areas of angioproliferation. In the “nodular” stage, the tumor is more solid, and there are well-defined nodules, which consist of large fascicles of spindle-shaped endothelial cells with fewer and more compact vascular slits (**Fig. 2**).

Immunohistochemical analyses with endothelial indicators (CD31, CD34,) and human herpesvirus-8 (latent nuclear antigen-1) monoclonal antibodies were performed for confirmation of the histopathological diagnosis in each case (**Fig. 3**) [13, 14].

Initial Evaluation

All patients underwent complete physical examination, hematological and biochemical analysis, and chest radiography. When clinically indicated, gastrointestinal endoscopy, abdominal ultrasound or computerized tomography scan were done. All patients had been tested for antibodies to HIV.

Treatment Response

Tumor response was assessed by changes in the size of tumor. A reduction in lesion size of more than 50% was defined as partial response; a complete response was clinical evidence that KS had regressed completely; stable disease was <50% reduction in disease; poor response was no response or deterioration. Recurrence was described as development of new KS lesions at the primary tumor site or in another place of the body after a period of complete clinical regression following a therapeutic intervention [15].

Statistical Analysis

Statistical analyses were performed by SPSS for Windows Version 20.0 (SPSS Inc., Chicago, IL, USA). Means ± standard deviation were calculated for continuous variables, while percentiles and frequencies were reported for categorical variables. Patients were divided into two groups as recurrent or primary KS, and the relation of investigated parameters which are stated in the materials and methods section and recurrence were analyzed. Variance between groups was analyzed by Pearson's $\chi 2$ test and Student's t test. $p < 0.05$ was considered statistically significant.