OBJECTIVE: To determine the diagnostic yield and safety of frame-based stereotactic biopsy. METHODS: Stereotactic biopsy was performed in 63 patients with supratentorial lesions treated in Regional Centre of Neurosurgery and Neurology from January, 2009 till January, 2014. 25 (38.5%) patients were male, and 40 (61.5%) – female. Mean age of the patients was 49.8 years. Indications for stereotactic biopsy were: deep location (basal ganglia, thalamus, internal capsule, corpus callosum), multiple lesions, eloquent cortical location or poor somatic condition of the patient. In all cases frame-based CT-navigated stereotactic biopsy was performed using ELEKTA FrameG. Computed tomography was performed on first postoperative day in all cases. RESULTS: Histologic results: anaplastic glioblastoma – 28 patients (43.1%), anaplastic astrocytoma – 10 patients (15.4%), anaplastic oligodendroglioma – 4 patients (6.2%), oligodendroglioma – 4 patients (6.2%), diffuse astrocytoma – 4 patients (6.2%), primary CNS lymphoma – 4 patients (6.2%), metastasis – 4 patients (6.2%), inflammatory lesion – 3 patients (4.6%), demyelination – 2 patients (3.1%), radiation necrosis – 1 patient (1.5%), negative result – 1 patient (1.5%). None of the patients deteriorated neurologically. Hemorrhage in biopsy site was found in 2 patients (3.1%) on CT, but was asymptomatic in both. 1 patient (1.5%) had superficial wound infection. Diagnostic yield in our series was 98.5%, as we had negative result in only 1 patient. CONCLUSION: Frame-based stereotactic biopsy can be considered a safe procedure with high diagnostic yield.