BRAIN TUMOR ANALYSIS REPORT

AI-Powered Segmentation and Clinical Assessment

Patient Information

Field	Value
Report Date	2025-09-19T07:19:37.476322
Case ID	case_7eb49f93-105c-4f51-925e-5c5850e76317
Patient Id	121
Patient Age	22
Patient Gender	male
Referring Physician	Dr. jayesh

AI-GENERATED CLINICAL REPORT

EXECUTIVE SUMMARY

This case demonstrates a large right-sided central brain tumor with moderate enhancement, minimal necrosis, and extensive peritumoral edema. The tumor exhibits features consistent with a high-grade glioma, given its size, enhancement pattern, and surrounding edema. Clinical correlation and histopathological evaluation are recommended for definitive diagnosis and management planning.

TUMOR MORPHOLOGY AND LOCATION

- Location: Right hemisphere, central brain region
- Size Classification: Very large (>15 cm^3)
- Maximum Diameter: 62.0 mm
- Anatomical Considerations: The central location in the right hemisphere may be associated with potential involvement of critical white matter tracts and functional areas, necessitating careful surgical planning if resection is indicated.

QUANTITATIVE ANALYSIS

- Total Tumor Volume: 52.92 cm^3
- Tumor Core Volume: 11.12 cm^3
- Enhancing Component: 10.86 cm^3 (20.5%)
- Necrotic Component: 0.26 cm^3 (0.5%)
- Edematous Component: 41.80 cm^3 (79.0%)

ENHANCEMENT CHARACTERISTICS

- Enhancement Pattern: Moderate (10–30%)
- Enhancement Intensity: Mean 520.73 HU, Maximum 1146.00 HU
- Clinical Significance: Moderate enhancement suggests active tumor proliferation with possible blood-brain barrier disruption; the presence of enhancement is consistent with a high-grade glioma or other aggressive neoplasm.

TISSUE COMPOSITION ANALYSIS

| Tissue Component | Presence | Clinical Interpretation |

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| Enhancing Tissue | Present | Indicates viable tumor tissue with active angiogenesis and possible malignant behavior. |

| Necrotic Core | Present | Minimal necrosis observed; may represent areas of treatment response or intrinsic tumor biology. |

| Peritumoral Edema | Present | Extensive edema (79%) is consistent with high-grade tumor or aggressive lesion. |

CLINICAL ASSESSMENT

• Tumor Grade Indicators: Large volume, moderate enhancement, and significant edema suggest a high-grade glioma, likely an anaplastic astrocytoma or glioblastoma.

• Differential Diagnosis: Likely high-grade glioma (e.g., glioblastoma multiforme or anaplastic astrocytoma), with possibility of other infiltrative tumors such as metastasis or lymphoma.

• Prognosis Indicators: The presence of significant edema and moderate enhancement correlates with a more aggressive tumor phenotype and potentially poorer prognosis, especially in younger patients.

RECOMMENDATIONS

1. Immediate Actions: Urgent multidisciplinary tumor board review and consideration for biopsy or surgical resection.

2. Additional Imaging: Consider perfusion MRI or MR spectroscopy to further characterize the tumor biology.

3. Multidisciplinary Review: Involvement of neurosurgery, oncology, and neuroradiology for treatment planning.

4. Follow-up Protocol: MRI with contrast at 3–6 months post-treatment, or earlier if clinical deterioration occurs.

5. Treatment Considerations: Likely indication for surgical resection, followed by adjuvant radiation and chemotherapy based on histology.

TECHNICAL NOTES

• Image Quality: Adequate for diagnostic interpretation

• Segmentation Confidence: High automated detection accuracy

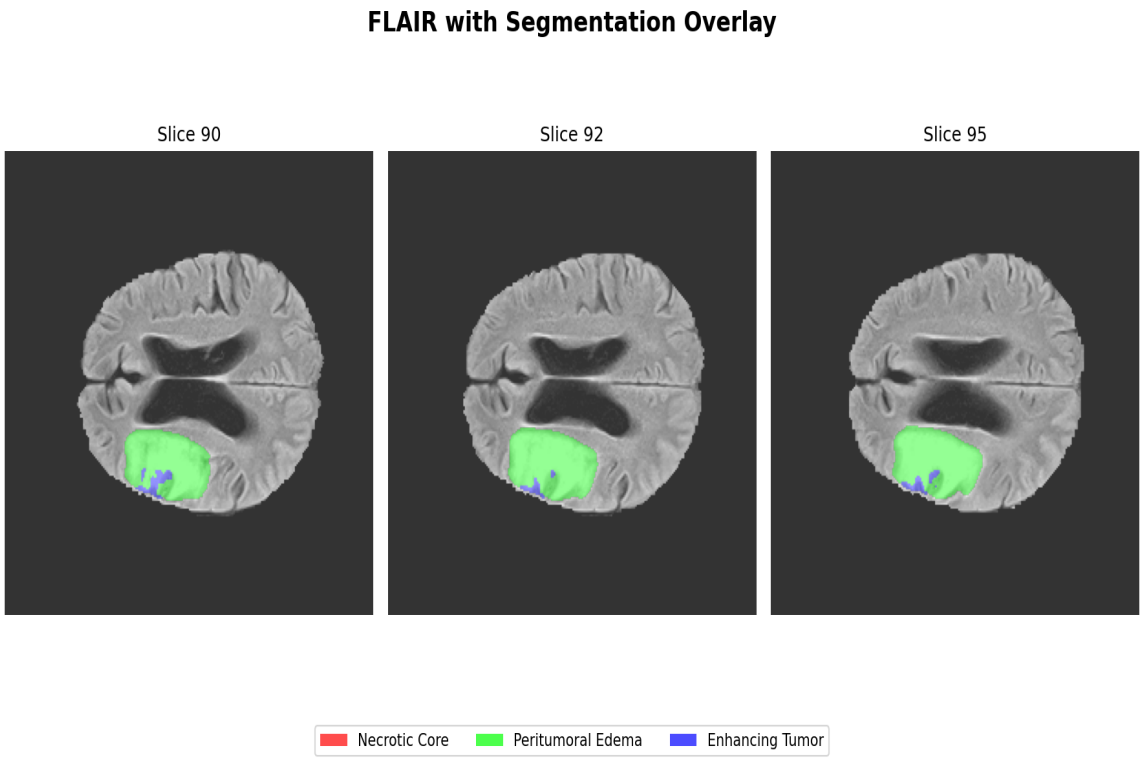
• Limitations: Standard limitations of MRI-based analysis include potential underestimation of subtle enhancement or infiltration, and reliance on contrast enhancement for viability assessment.

Report Generated: September 19, 2025 at 07:19 AM

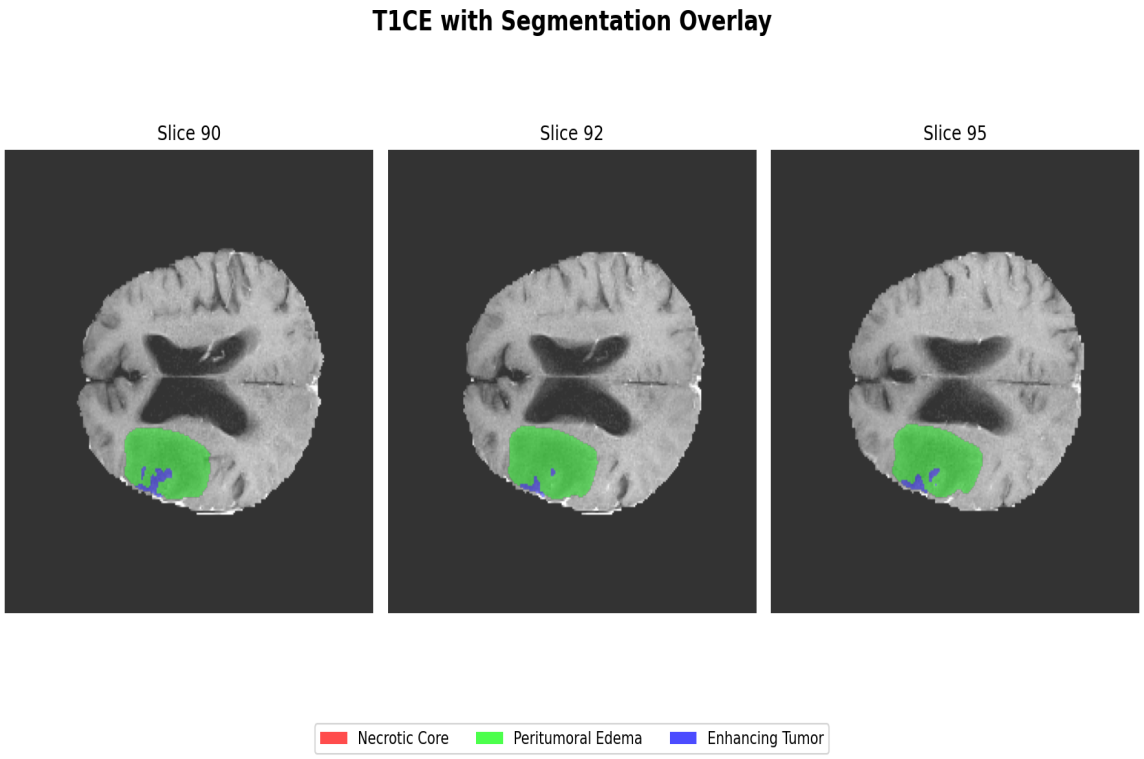
System: AI-Assisted Brain Tumor Analysis Platform

SEGMENTATION VISUALIZATIONS

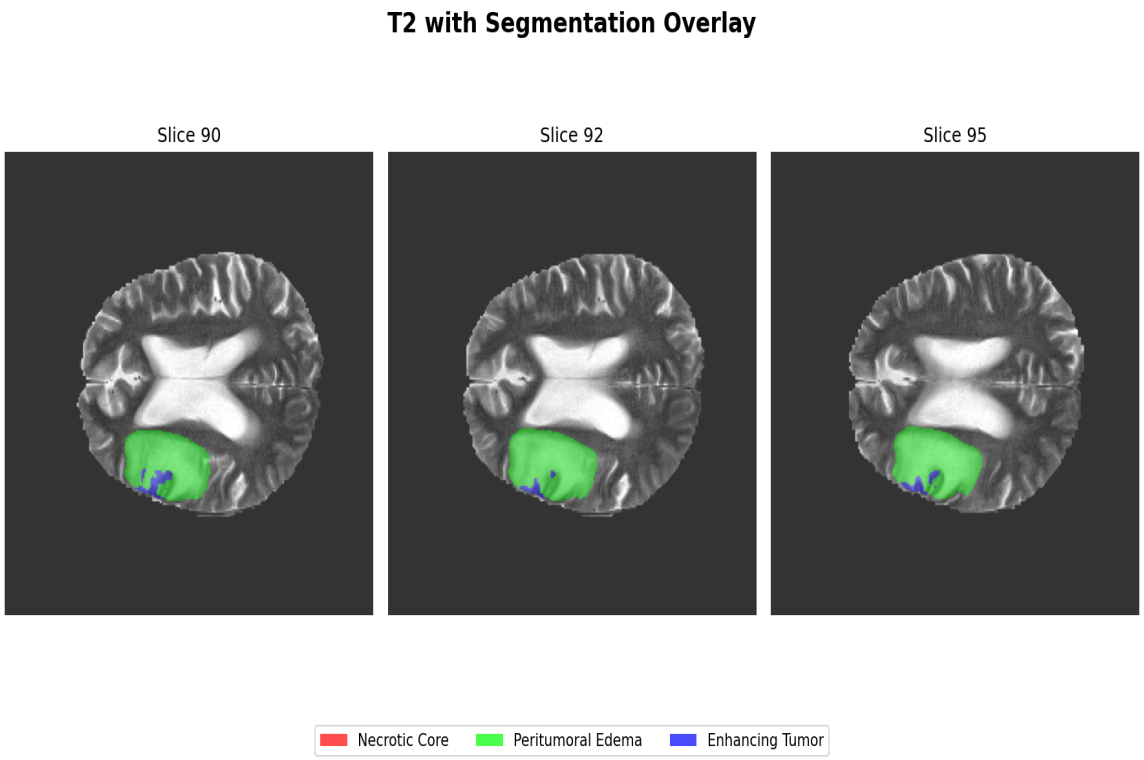
FLAIR Segmentation Overlay



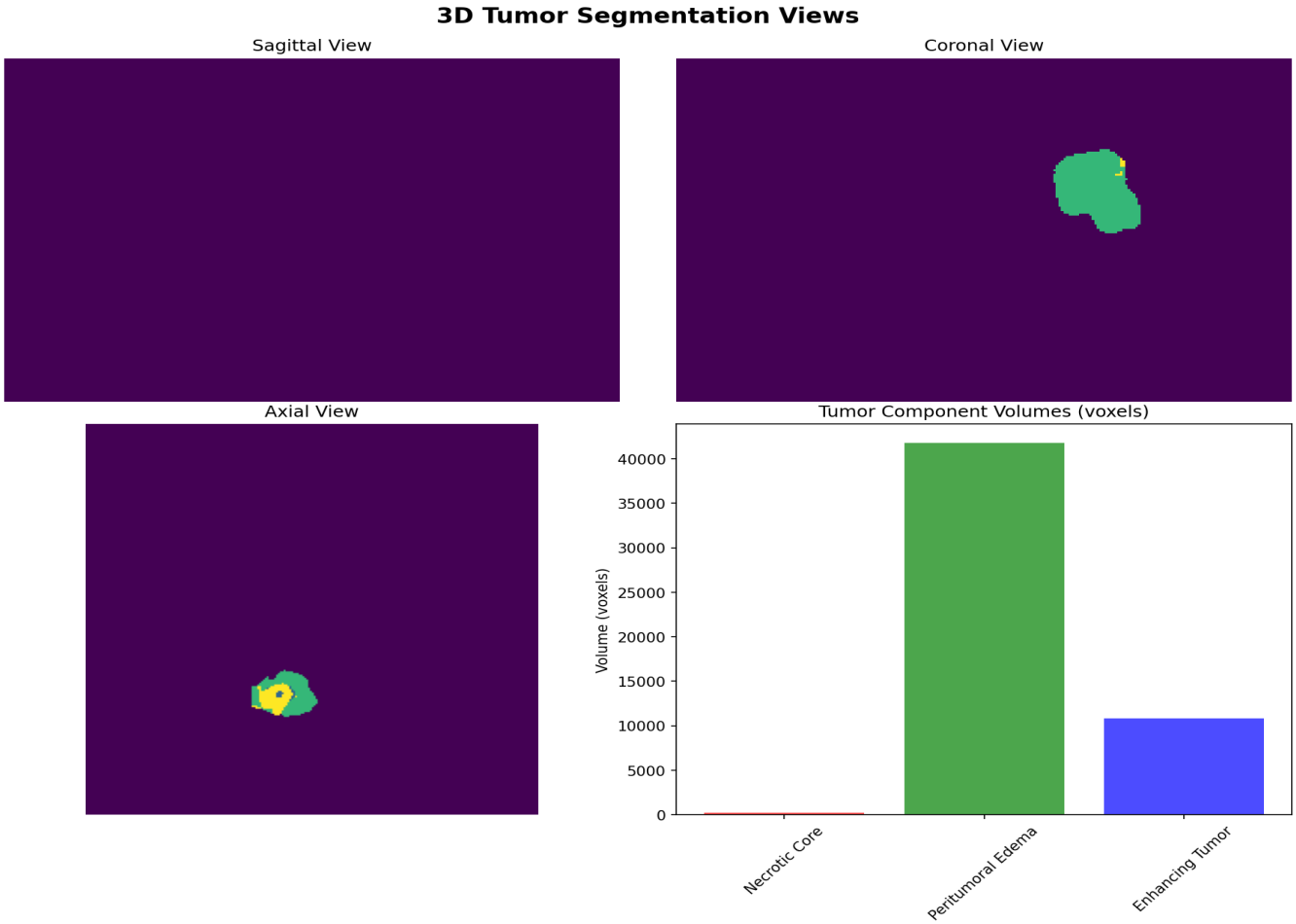
T1CE Segmentation Overlay



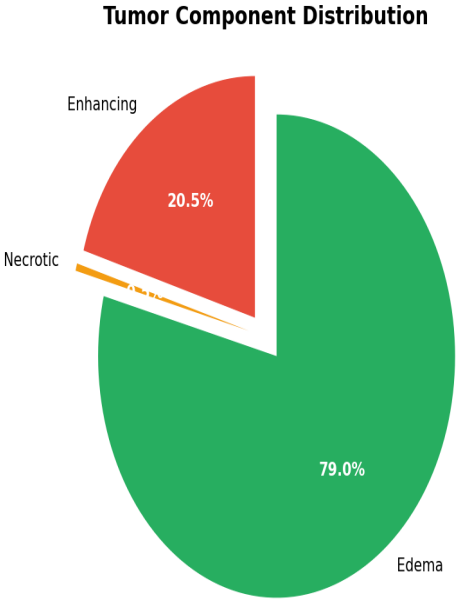
T2 Segmentation Overlay

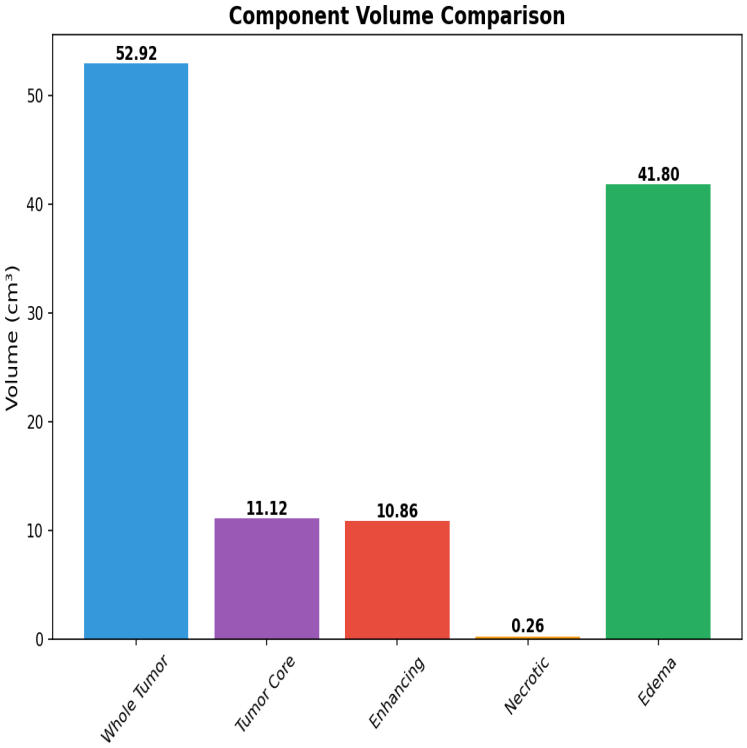


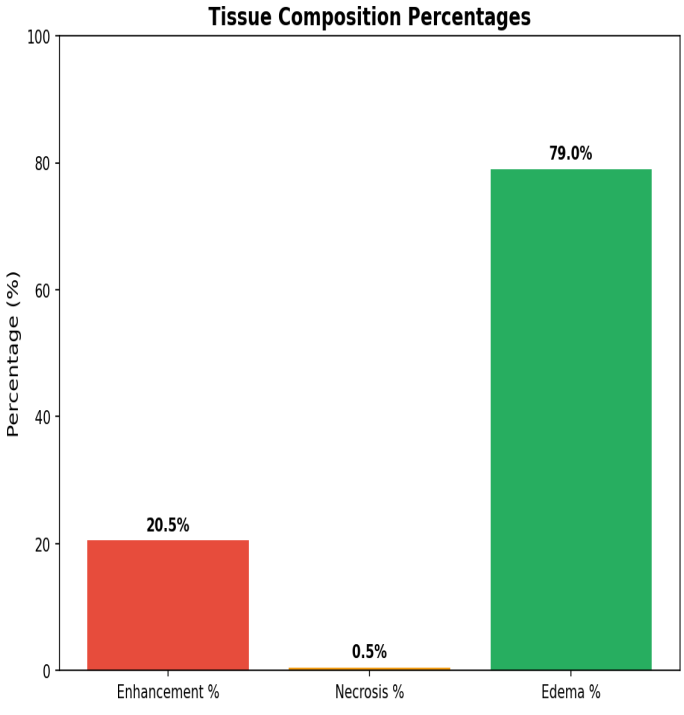
3D Volume Analysis

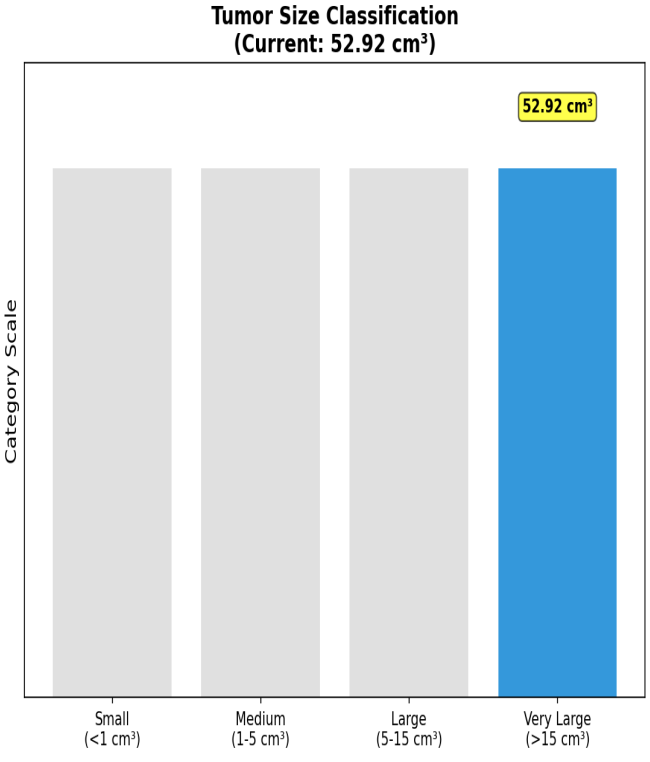

3D Tumor Segmentation Views
Sagittal View
Coronal View
Axial View
Tumor Component Volumes (voxels)
Volume (voxels)
0
5000
10000
15000
20000
25000
30000
35000
40000
Necrotic Core
Peritumoral Edema
Enhancing Tumor

QUANTITATIVE ANALYSIS









Clinical Summary Table

Parameter	Value	Clinical Significance
Total Volume	52.92 cm³	very_large (>15 cmÂ³)
Maximum Diameter	62.0 mm	Surgical planning reference
Enhancement	20.5%	moderate (10-30%)
Necrosis	0.5%	minimal (<10%)
Location	right central	Functional considerations
Enhancement Present	yes	Blood-brain barrier disruption
Necrosis Present	yes	Tissue viability indicator
Edema Present	yes	Peritumoral involvement

IMPORTANT DISCLAIMERS

• This report is generated using artificial intelligence algorithms for automated brain tumor segmentation and analysis.

• The AI model used for report generation is designed to assist healthcare professionals but does not replace clinical judgment.

• All quantitative measurements and assessments should be validated by qualified radiologists and medical professionals.

• Treatment decisions should not be based solely on this automated analysis.

• This system is intended for research and educational purposes and to support clinical decision-making.

• Report generated on September 19, 2025 at 07:19 AM using microsoft/DialoGPT-medium.