

How Important is Complete Surgical Resection for Survival of Acute Invasive Fungal Sinusitis?

Case Series and Review of the Literature



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Abstract

Objectives: Describe cases in which complete surgical resection was not required to survive acute invasive fungal sinusitis (AIFS). Compare patient demographics, disease extent, and treatment in these patients with those who underwent complete surgical resection.

Study Design: Retrospective case series at a single tertiary care institution.

Results: Sixty patients with AIFS were identified.

Causes of immunosuppression included:

- Bone marrow transplant: 12 cases
- Leukemia: 28 cases
- Diabetes mellitus: 17 cases
- Chronic immunomodulator use: 4 cases

Only two-thirds of patients underwent complete surgical resection. Despite this, 50% survived their infection. Six patients survived with medical management alone, all receiving IV antifungal therapy.

Conclusion: Complete surgical resection is **not always required** for survival in AIFS. Radical surgical excision must be carefully weighed against potential morbidity on a case-by-case basis.

Introduction

Background

Acute invasive fungal sinusitis (AIFS) is a rapidly progressive, often fatal condition in immunocompromised patients. Historically, radical surgical debridement combined with systemic antifungals has been the standard of care. However, in some cases, aggressive surgical resection may not be feasible or necessary.

Objective

This study evaluates outcomes in patients who survived AIFS without complete surgical resection, analyzing demographics, disease extent, and treatment differences.

Hypothesis

Patients with incomplete or no surgical resection can still achieve survival with appropriate antifungal therapy.

Methods and Materials

Study Design: Retrospective chart review at a tertiary care center.

Timeframe: 2002-2023

Inclusion Criteria:

- Patients diagnosed with AIFS via histopathology or fungal culture.
- Underwent surgical and/or medical management.
- Had documented follow-up for survival analysis.

Exclusion Criteria:

- Chronic fungal sinusitis cases.
- Patients with missing or incomplete medical records.

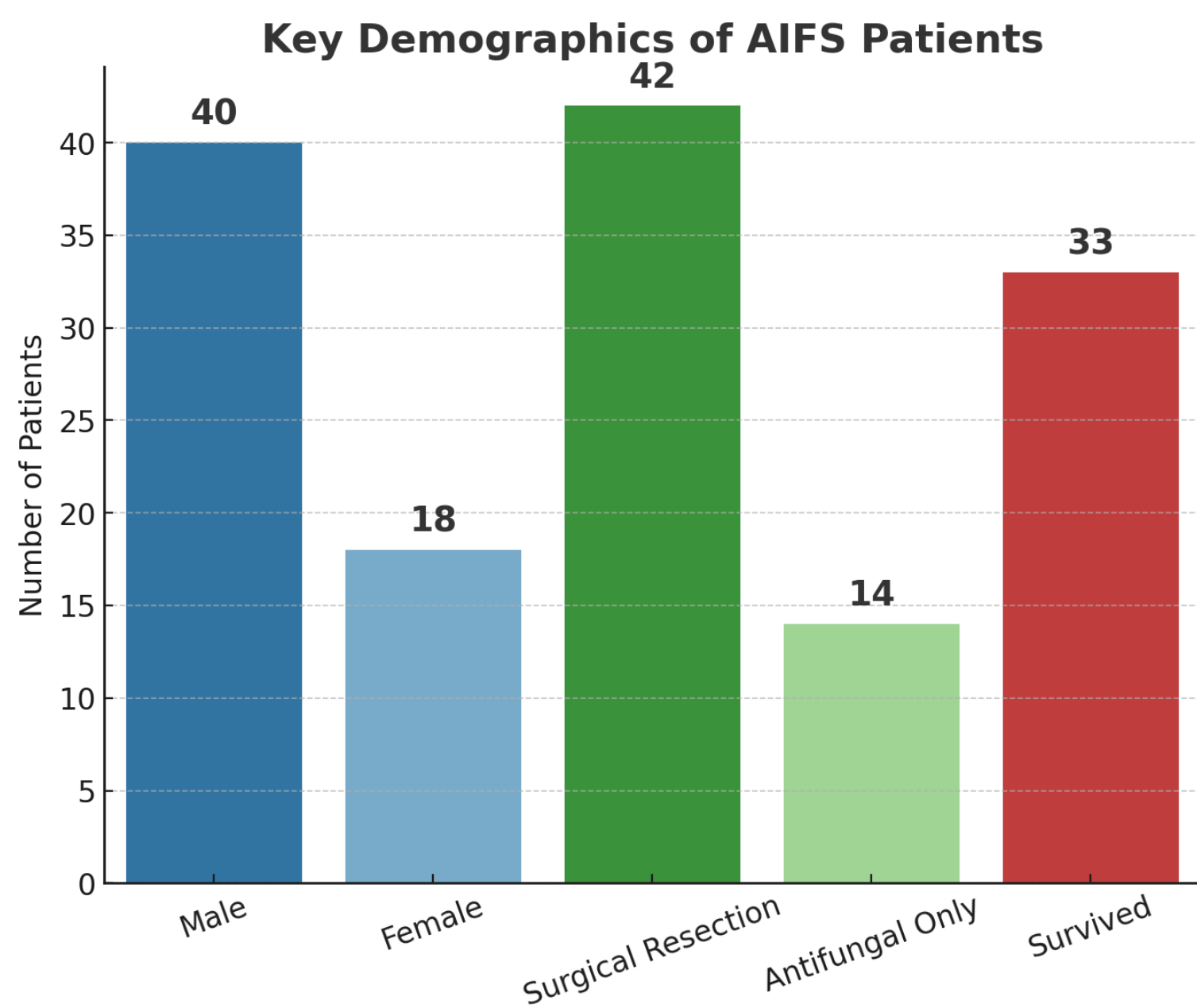
Data Collection:

- Demographics & Comorbidities: Age, sex, immunosuppression cause.
- Disease Extent: Orbital/intracranial involvement, sinus involvement.
- Treatment: Surgical extent (none, partial, complete), antifungal therapy.

Outcomes: Survival, recurrence, complications.

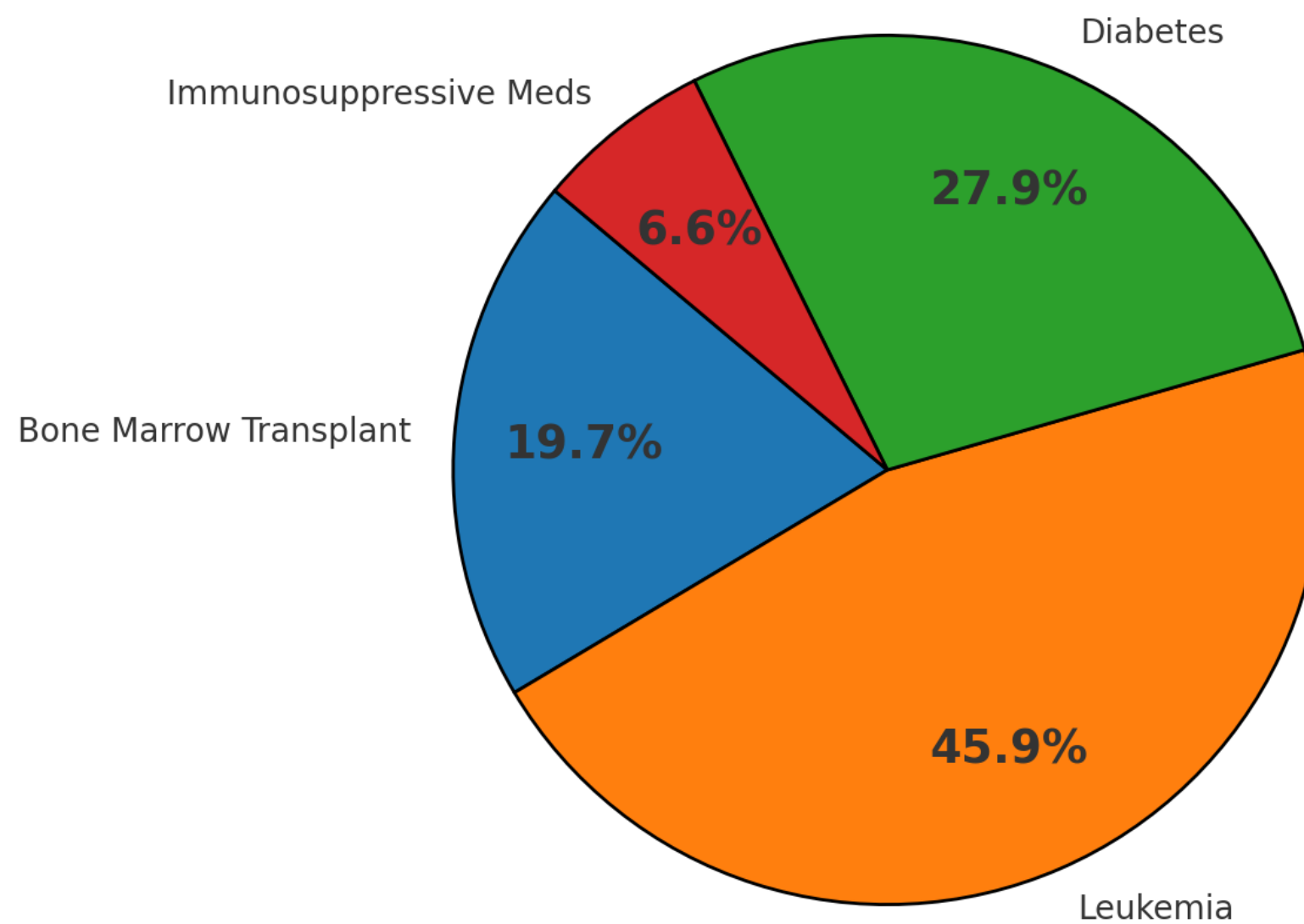
Statistical Analysis

- Descriptive statistics for patient characteristics and treatment distribution.
- Kaplan-Meier survival analysis comparing surgical vs. nonsurgical patients.
- Chi-square and Cox regression models for predictors of survival.

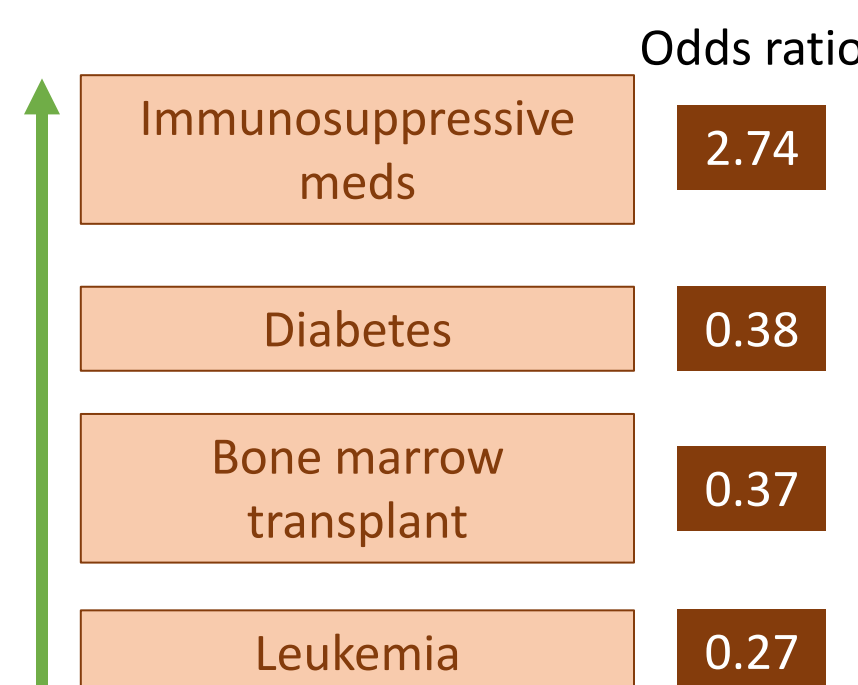


Results

Immunosuppression Distribution in AIFS Patients



Odds of Survival



Only 2/3 of patients underwent complete surgical resection

Despite this, 50% survived their infection.

Six patient survived with medical management alone

Discussion

Key Findings:

- Complete surgical resection was not necessary for survival in all cases.
- Medical therapy alone led to survival in a small subset of patients.
- Extent of surgery did not always correlate with better survival.
- Mortality was high overall, highlighting the severity of AIFS.

Interpretation & Controversies:

- Traditional teaching emphasizes aggressive debridement, but these results suggest a selective approach may be viable.
- Surgical morbidity vs. benefit: Orbital exenteration and radical maxillectomy may cause significant disability without clear survival benefit in all cases.
- Role of systemic antifungal therapy: High-dose liposomal amphotericin B + posaconazole provided survival even in cases without complete resection.

Limitations:

- Retrospective design introduces potential bias.
- Single-institution study, limiting generalizability.
- Heterogeneous treatment regimens among patients.

Future Directions:

- Prospective trials comparing radical vs. conservative surgery.
- Biomarker-based risk stratification for individualized treatment.
- Adjunctive therapies such as hyperbaric oxygen and immune modulation

Conclusions

- Complete surgical resection is not always required for survival in AIFS.
- Careful patient selection is necessary to balance surgical morbidity with survival benefit.
- Further research is needed to refine treatment protocols and identify patients who may benefit from less aggressive surgical management.

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