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Hematopoietic stem cell transplantation in Ewing sarcoma of pediatric

Ewing sarcoma is a group of solid tumours consisting of small, blue, round cell neoplasms of neuroectodermal origin.

The other types of tumours in the group are primitive neuroectodermal tumour (PNET), extraosseous Ewing sarcoma (EES), and Askin's tumour (Ewing sarcoma of the chest wall).

Ewing sarcoma is a tumour that occurs in the bone and soft tissue, especially in the long bones and pelvis, and mainly in children, adolescents and young adults.

Ewing sarcoma is a malignant bone tumor with a predilection for young people.

Refractory or recurrent disease has a dismal prognosis.

The prognosis for many pediatric and young adult patients with solid tumors that have metastasized at the time of diagnosis or have relapsed after therapy remains *very poor*

High-dose chemotherapy and autologous stem-cell transplant may prolong survival.

Risk stratification at relapse may aid clinical decision-making.

Reduced-Intensity Allogeneic Stem Cell Transplantation in Children and Young Adults with Ultrahigh-Risk Pediatric Sarcomas

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received 3 cycles of induction EPOCH-F

etoposide, 50 mg/m2 per day by continuous i.v. infusion days 1 to 4; prednisone, 60 mg/m2 per day in 2 to 4 divided loses orally on days 1 to 5; vincristine, 0.4 mg/m2 per day by continuous i.v. infusion on days 1 to 4; cyclophosphamide, 750 mg/m2 i.v. over 30 minutes on day 5; doxorubicin, 10 mg/m2 per day by continuous i.v. infusion days 1 to 4; ludarabine, 25 mg/m2 per day i.v.

Transplant conditioning consisted of:

cyclophosphamide 1200 mg/m2/day on days −6 through −3; fludarabine 30 mg/m2/day and days −6 through −3; and melphalan 100 mg/m2 on day −2.

ultrahigh-risk Ewing's sarcoma family of tumors (ESFT), alveolar rhabdomyosarcoma, or desmoplastic small round cell tumors received EPOCH-fludarabine induction, a cyclophosphamide/fludarabine/melphalan preparative regimen, and HLA matched related peripheral blood stem cells.

Seventeen patients had ESFT, 7 had aRMS, and 6 had DSRCT

All 23 alloHSCT recipients experienced rapid full-donor engraftment, with no peritransplantation mortality

Five of 23 alloHSCT recipients (22%) remain alive (at 3 years)

This largest reported series of alloHSCT in sarcomas demonstrates that alloHSCT is safe in this population, and that patients undergoing alloHSCT without overt disease show higher survival rates than reported using standard therapies

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Long-Term Follow-up of High-Dose Chemotherapy with Autologous Stem Cell Transplantation in Children and Young Adults with Metastatic or Relapsed Ewing Sarcoma: A Single-Institution Experience

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- Forty-seven patients with metastatic disease at diagnosis or recurrent Ewing sarcoma

- All patients were treated with HDC-ASCT from February 13, 1997, to September 5, 2018,

- age ≤30 years at the date of transplant, Karnofsky performance status of >70% in patients older than 16 years and Lansky's performance status of ≥70% in children, left ventricular ejection fraction >50%, Diffusing capacity for carbon monoxide (DLCO) >50%, and normal liver and kidney function.

Conditioning Regimen

Day	Drug	Dose
–8 to –4	Topotecan hydrochloride	2 mg/m^2 i.v. over 24 hours
	Busulfan	32 mg/m^2 i.v. every 6 hours × 16 doses (>18 yr) or 0.8 mg/kg per dose × 16 doses (≤18 yr)
–3 to –2	Melphalan	70 mg/m^2 i.v. over 30 minutes
–1	Rest	
0	PBSC	

Local control
surgery alone, radiotherapy alone, or with surgery and radiotherapy.

Radiotherapy was given either prior to or following ASCT.

Residual radiographic disease at the primary site was present in 14 patients at the time of HDC-ASCT.

In our study of 47 patients treated with HDC-ASCT, the OS curves with estimates of 46% (95% CI, 31% to 60%) at 10 years and 42% (95% CI, 27% to 56%) at 15 years

High-dose chemotherapy followed by autologous haematopoietic cell transplantation for children, adolescents, and young adults with first recurrence of Ewing sarcoma

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Relapse of Ewing sarcoma occurs at an average of 1.6 to 2.3 years after starting initial treatment (Bacci 1989; Rodrigues-Galindo 2007), although very late recurrences, more than 16 years after treatment of a primary tumour, have also been reported (Hanna 2008)

Haploidentical hematopoietic stem cell transplantation as individual treatment option in pediatric patients with very high-risk sarcomas

15 patients with primary disseminated disease and 14 with metastatic

Three-year event-free survival (EFS) was 18,1% and predominantly determined by disease relapse.

Conclusion: Haplo-HSCT for consolidation after conventional therapy seems to be of interest for some, but not for the majority of patients with high-risk pediatric sarcomas. Evaluation of its future use as basis for subsequent humoral or cellular immunotherapies is necessary.

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High-dose chemotherapy and autologous peripheral blood stem cell transplantation in Ewing sarcoma family of tumors

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1https://www.ncbi.nlm.nih.gov/

A total of 9 patients (3 male, 6 female)
median age a 13.4 years (range, 7.1 to 28.2 years),
conventional chemotherapy and local control either by surgery or radiation therapy,
(CR, n=7), partial response (n=1), or stable disease (n=1) prior to HDCT/autoPBSCT.

overall survival and event-free survival after HDCT/autoPBSCT were 13.3 months and 6.2 months respectively.
4 patients are alive
The 2-year survival after HDCT/autoPBSCT was 44.4%±16.6%

Allogeneic stem cell transplantation from HLA identical donor in high-risk sarcoma.

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21 pts, median age 16 (6-22) years, affected by resistant (3) or relapsed (8) RMS and resistant (6) or relapsed (4) ES,

conditioning regimen consisting of thiotepa + melphalan ± fludarabine or cyclophosphamide

identical sibling in 14 cases or an unrelated donor (UD) in 7

time of transplant 19 pts PR and 2 (1 RMS and 1 ES) in progressive disease.

Graft versus host disease (GVHD) prophylaxis consisting of cyclosporin A ± anti-lymphocytic serum and short term methotrexate in UD setting. SC sources were bone marrow in 13 cases and peripheral blood in 8.

The reconstitution of bone marrow function in all 21 pts.

Acute GVHD of grade II-IV occurred in 6 pts

After a median follow-up of 28 (1-58) months for ES and 4 (1-18) months for RMS, 8 pts (5 RMS and 3 ES) relapsed,

14 dead (7 for progressive disease and 7 for TRM) and 6 pts are alive and well.

نکات مهم

پیوند سلولهای بنیادی در بیماران یووینگ عود کننده یامقاوم هست

نرخ بقا در مطالعات متفاوت ولی حدود 33درصد است پیوند در مان استاندارد نیست ونیاز به مطالعه بیشتر هست

پیوند های آلوژن با عوارض بیشتری همراه هستند

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