

# Clinical application of combination of ruxolitinib and extracorporeal photopheresis in therapy of steroid-refractory acute and chronic graft versus host disease.



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**Introduction:** The REACH III trial was completed in May 2020. Data from a large retrospective cohort study revealed that ruxolitinib was superior to best available therapy for graft-versus-host disease (GVHD) today. On the other hand, up to 30% of patients with GVHD are refractory to this therapy, and there is no standard-of-care therapy for these patients.

## Patients and methods:

We conducted a retrospective, single-centered study in a group of patients refractory to ruxolitinib monotherapy. Analysis incorporated 26 patients treated with the combination of ruxolitinib and extracorporeal photopheresis. The median age was 20 years (3 to 46), men 50% (13), and women 50% (13). 57.7% (15) were adults and 42.3% (11) were children. Severe degree of chronic GVHD or 3-4 degree of acute GVHD at the start of treatment was observed in the vast majority of cases- 84.6% (22). 61,5 % had moderate to severe GVHD (16). Organ involvement: 92,3 % had skin GVHD (24); 73,1 % - GVHD of mucous membranes; 61,5 % GVHD of eyes; 53,8 % - GVHD of liver; 23 % had joint GVHD.

## Results:

We conducted a retrospective, single-centered study in a group of patients refractory to ruxolitinib monotherapy. Analysis incorporated 26 patients treated with the combination of ruxolitinib and extracorporeal photopheresis. The median age was 20 years (3 to 46), men 50% (13), and women 50% (13). 57.7% (15) were adults and 42.3% (11) were children. Severe degree of chronic GVHD or 3-4 degree of acute GVHD at the start of treatment was observed in the vast majority of cases- 84.6% (22). 61,5 % had moderate to severe GVHD (16). Organ involvement: 92,3 % had skin GVHD (24); 73,1 % - GVHD of mucous membranes; 61,5 % GVHD of eyes; 53,8 % - GVHD of liver; 23 % had joint GVHD.

**Conclusion:** In 61.5% of patients you can get a response on combined therapy with ruxolitinib and extracorporeal photopheresis. The vast majority of patients have no worsening or progression of GVHD. It means that the combination of ruxolitinib with extracorporeal photopheresis is a successful approach for therapy of GVHD in resistant patients. Due to the small sample size, validation on larger patient groups is necessary.

Table 1. Characteristics of patients

Characteristic	Parameter	% (n)
Gender	Male	50% (13)
	Female	50% (13)
Age	Adults	57,7% (15)
	Children	42,3% (11)
Overall GVHD	Medium	15,4% (4)
	Severe	84,6% (22)
<b>Organ involvement</b>		
Skin	Severe	59,3%(16)
	Medium	11,1% (3)
	Light	18,5% (5)
	No GVHD	7,7% (2)
Mucus	Severe	18,5 % (5)
	Medium	29,6% (8)
	Light	22,2% (6)
	No GVHD	26,9% (7)
Eyes	Severe	11,1% (3)
	Medium	7,4% (2)
	Light	40,7% (11)
	No GVHD	37% (10)
GI	Severe	14,8 % (4)
	Medium	7,4% (2)
	Light	14,8% (4)
	No GVHD	59,3% (16)

Figure A. GVHD degree before and after ECP + Ruxolitinib therapy

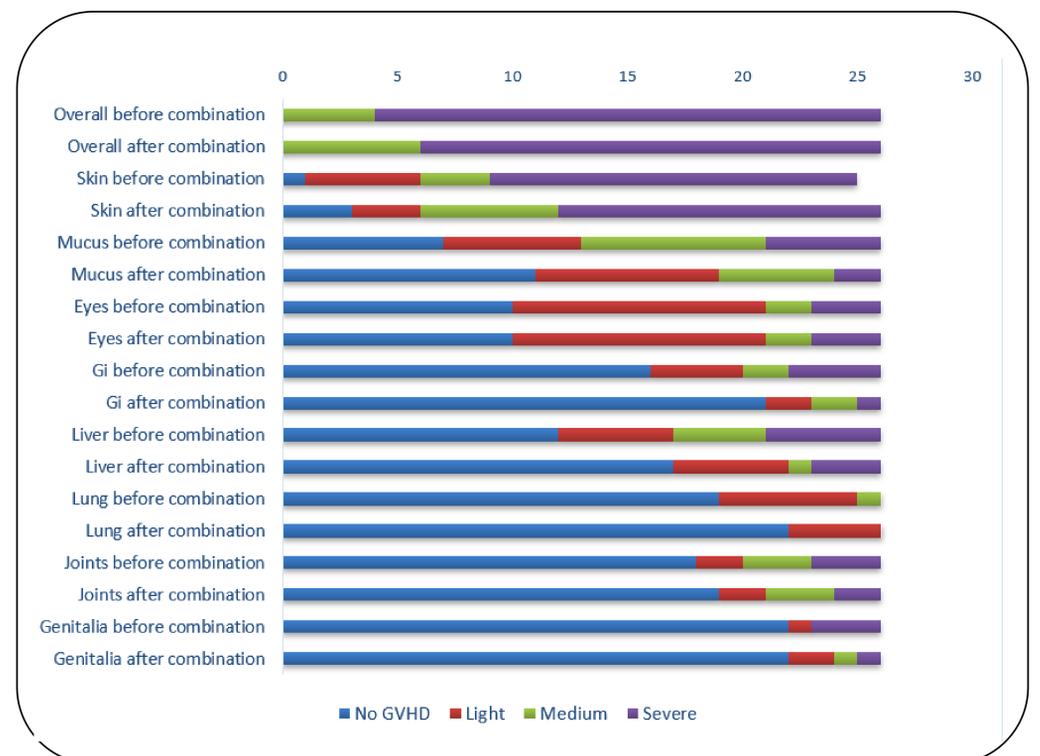


Figure A. Overall and failure-free survival

