Immunoscore feasibility study in routine postsurgical pathologic review for early-stage colon cancer (CC) cases risk-assessment

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BELALOUI Karim[1]*, MALIFARGE Elodie[1], BOHM Jan[2], BOSSARD Céline[3], DIENSTMANN Rodrigo[4], GARCIA Stephane[5], GOGENUR Ismail[6], HARTMANN Arndt[7], GEPPERT Carol[7], HATZIBOUGIAS Dimitris[8], LANDOLFI Stefania[4], MISHAELI Moshe[9], PAEZ David[10], PATEL Prabhudas[11], RODRIGUEZ-JUSTO Manuel[12], SZAFRANSKA Justyna[10], VAN DEN EYNDE Marc[13], ZAVADOVA Eva[14], TURCAN Sarah[1], HERMITTE Fabienne[1]

1 HalioDx, Marseille, FRANCE | 2 Jyväskylä, Central Finland Central Hospital , FINLAND | 3 CHU de Nantes - Hôtel Dieu, FRANCE | 4 Vall d'Hebron Institute of Oncology, Barcelona, SPAIN | 5 Hôpital Nord, Marseille, FRANCE |6 EPeOnc Consortium, Zealand University Hospital (ZUH) DENMARK | 7 Pathologisches Institut Erlangen-Nürnberg, GERMANY | 8 MicroDiagnostics Ltd., GREECE | 9 Meir Medical Center, ISRAEL | 10 Hospital de la Santa Creu i Sant Pau, Barcelona, SPAIN | 11 Gujarat Cancer Research Institute, INDIA | 12 University College London Hospitals NHS Foundation Trust, LONDON | 13 Cliniques universitaires St-Luc, BELGIUM | 14 Charles University Hospital, CZECH REPUBLIC

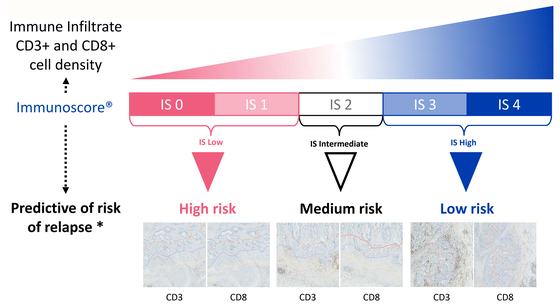
Background

Immunoscore® Colon is an *in vitro* diagnostic test predicting the risk of relapse in early-stage CC patients, by measuring the host immune response at the tumor site.

It is a risk-assessment tool that provides independent and superior prognostic value than the usual tumor risk parameters and is intended to be used as an adjunct to the TNM classification.

The availability of the result in a satisfactory turn-around-time (TAT), compatible with adjuvant treatment decisions, is critical for the inclusion of Immunoscore as a new component for a TNM-Immune (TNM-I) classification of CC.

Test principle

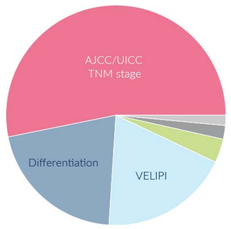


* Based on the international Immunoscore® SITC study results (2681 CC patients samples) *Pagès et al. The Lancet 2018.<*

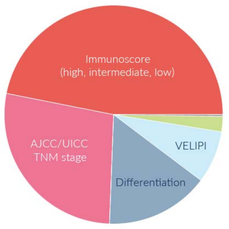
Risk of relapse assessment and survival prediction

In the international validation (Pagès et al. The Lancet 2018), of all clinical parameters, the relative contribution to the risk of relapse showed that Immunoscore® (47%) was better than TNM staging (28%), grade of differentiation (15%), VELIPI (8%), sex (<3%), mucinous, and MSI status.

Immunoscore® was stronger than all these clinical parameters, showing the highest contribution to predict survival:



Clinical parameters

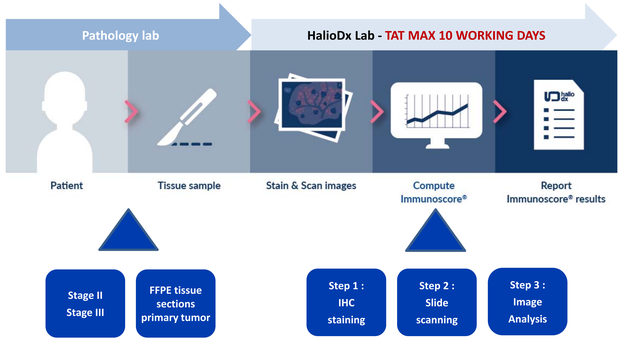


Clinical parameters plus Immunoscore

Mucinous (colloid)
MSI
Sex

Pagès et al. The Lancet 2018

Immunoscore® Colon Workflow



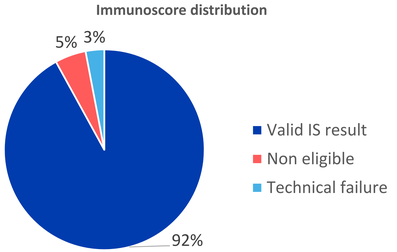
Method

Patients with stage II and III CC were recruited from 13 centers in Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, India, Israel, Spain, UK.
Paraffin blocks or 4 slides of adjacent sections were sent at room temperature for centralized Immunoscore testing to the HalioDx laboratory (Marseille, France).
Densities of CD3+ and CD8+ T-cells were determined in core tumor (CT) and invasive margin (IM) by immunohistochemistry, and then quantified by image analysis. Immunoscore was calculated based on predetermined cutoffs established on a multicenter series of early-stage CC patients (Pagès et al., The Lancet 2018). Immunoscore was reported in categorical scores (IS 0 to 4), and clinical groups: Immunoscore High (IS 3-4) for highly infiltrated tumors, Immunoscore Intermediate (IS 2) and Immunoscore Low (IS 0-1, low infiltration). Eligibility criteria: surgical samples from primary tumors containing both CT and IM, with sufficient tissue area (minimum 3mm²).

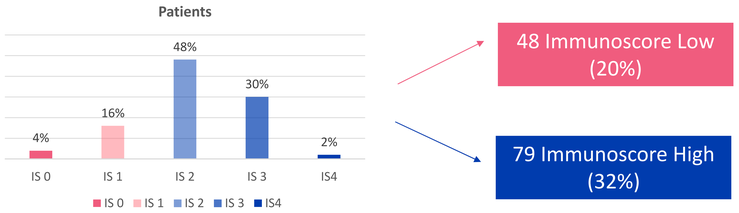
Results

265 individual patient samples were received and 253 were eligible. A valid Immunoscore result was obtained in 97% of cases (n=245). Reasons for failures were immunostaining background, torn tissues, insufficient tumor content or absence of IM.

	IS Distribution	
Valid IS result	245	92%
Non eligible	12	5%
Technical failures	8	3%
TOTAL	265	



Immunoscore distribution was 4%, 16%, 48%, 30% and 2% for IS 0, IS 1, IS 2, IS 3 and IS 4 respectively, corresponding to 48 Immunoscore Low and 79 Immunoscore High tumors. 201 samples were eligible for TAT recording; maximum TAT was 13 days, with 97% of the results reported in 12 days or less from sample reception.



Conclusions

- ✓ The observed distribution between IS Low/Intermediate/High in a real-life prospective setting (20%/48% /32%) is conform with the distribution (22%/51% /27%) reported in the validation study (Pagès et al., The Lancet 2018).
- ✓ This study shows that the Immunoscore can be performed on most of the surgical specimens and can be included in the pathological report in a timely manner, compatible with post-surgery treatment decisions.

References

Immunoscore® surpasses TNM for prediction of tumor recurrence and survival in CRC patients.

- Pagès F. et al. The Lancet, 2018;391:2128-2139

Stage II CC patients with Immunoscore Low have a higher risk of recurrence.

- Pagès F. et al. The Lancet, 2018;391:2128-2139

Immunoscore® is a stronger predictor of survival than MSI in CC.

- Mlecnik B. et al. Immunity 15;44(3):698-711, 2016
- Pagès F. et al. The Lancet, 2018;391:2128-2139

Stage III CC patients with Immunoscore High have a lower risk of recurrence regardless of the MSI status.

- Sinicrope, F. A et al. ASCO Annual Meeting J. Clin. Oncol. 35, 2017 (suppl; abstr 3579) (manuscript in preparation)

Immunoscore® provides prognostic information in low and high T/N risk subsets of Stage III CC.

- Sinicrope, F. A et al. ASCO GI J Clin Oncol 36, 2018 (suppl 4S; abstr 614) (manuscript in preparation)