

Colon cancer: ESMO Clinical Recommendations for diagnosis, adjuvant treatment and follow-up

E. J. D. Van Cutsem¹ & J. Oliveira²

On behalf of the ESMO Guidelines Working Group*

¹Digestive Oncology Unit, University Hospital Gasthuisberg, Leuven, Belgium; ²Service of Medical Oncology, Portuguese Institute of Oncology, Lisbon, Portugal

incidence

In 2006 there were 412 900 new cases of colorectal cancer in Europe. This is 12.9% of all cancer cases. Colorectal cancer was responsible for 217 400 deaths in Europe in 2006. This represents 12.2% of all cancer deaths.

diagnosis

Diagnosis of colon cancer requires histopathologic confirmation. Risk factors for, location and histological evaluation of colonic tumors should be documented.

staging and risk assessment

Staging provides essential prognostic information relevant for choosing adequate therapy and should also identify patients with resectable distant metastases.

Preoperative staging consists of clinical examination, blood counts, liver and renal function tests, carcino-embryonic antigen (CEA), chest X-ray or CT scan, CT scan of the abdomen, and colonoscopy of the entire large bowel, i.e. with postoperative repeat colonoscopy if proximal parts of the colon were not accessible preoperatively.

Pathologic staging should be carried out according to the TNM 2002 system with optional listing of the modified Dukes stage, as described in Table 1.

Risk factors for colorectal cancer are: family history, familial adenomatous polyposis (FAP) and attenuated FAP (AFAP) syndromes, hereditary non-polyposis colorectal cancer (HNPCC) syndrome, past history of colorectal cancer or adenoma, chronic ulcerative colitis and Crohn's disease.

treatment plan in colon cancer

Adjuvant chemotherapy is recommended for stages T1–4, N1–2, M0 (i.e. stage III, modified Dukes C1–3). Adjuvant chemotherapy may be considered in selected node-negative

Table 1. TNM 2002 system

TNM	Stage	Extension to	5-year overall survival (%)
Tis N0 M0	0	Carcinoma <i>in situ</i>	Most likely normal
T1 N0 M0	I	Mucosa or submucosa	>90
T2 N0 M0	I	Muscularis propria	>85
T3 N0 M0	IIa	Subserosa/pericolic tissue	>80
T4 N0 M0	IIb	Perforation into visceral peritoneum or invasion of other organs	72
T1–2 N1 M0	IIIa	≤3LN	60–83
T3–4 N1 M0	IIIb	≤3LN	42–64
T1–4 N2 M0	IIIc	≥4LN	27–44
Any T any N M1	IV	Distant metastases	<10

LN, lymph nodes.

patients, especially if high-risk factors for recurrence are found. Amongst the known high-risk factors in stage II colon cancer are: T4, poorly differentiated adenocarcinoma/undifferentiated carcinoma, vascular invasion, lymphatic vessel invasion, perineural invasion, obstruction or tumor perforation at initial presentation, ≤12 regional lymph nodes examined and high CEA level.

Standard adjuvant treatment consists of fluoropyrimidine-based chemotherapy which has been shown to result in a statistically significant survival benefit. The combination of 5-fluorouracil (5-FU)/leucovorin (LV) plus oxaliplatin significantly improves disease-free survival in stage II and III colon cancer and improves also overall survival in stage III colon cancer compared with 5-FU/LV.

Options for adjuvant treatment include infusional 5-FU/LV regimens and capecitabine. Capecitabine has been shown to be at least as effective as, and less toxic than, bolus 5-FU/ LV.

follow-up

The aims of follow-up (surveillance) are to identify recurrence of colon cancer at a stage in which the diagnosis or recurrence will

*Correspondence to: ESMO Guidelines Working Group, ESMO Head Office, Via L. Taddei 4, CH-6962 Viganello-Lugano, Switzerland

Approved by the ESMO Guidelines Working Group: April 2002, last update July 2007. This publication supersedes the previously published version—Ann Oncol 2007; 18 (Suppl 2): ii21–ii22.

Conflict of interest: Dr Van Cutsem has reported no conflict of interest.

have therapeutic implications: i.e. surgery for metastatic disease or for local recurrence or chemotherapy for metastatic disease.

There is no preferred schedule for follow-up. Besides history and physical examination, the following tests may be considered to identify patients in need of salvage surgery or palliative care and to prevent second colorectal cancers.

- Colonoscopy at year 1 and thereafter every 3–5 years to look for metachronous adenomas and cancers.
- Ultrasonography of the liver every 6 months for 3 years and after 4 and 5 years. CT scan of the chest and abdomen for 3 years can be considered in patients who are at higher risk for recurrence.
- Chest X-ray has a low sensitivity but can be considered every year for 5 years.
- CEA determination every 3–6 months for 3 years and every 6–12 months in years 4 and 5 after surgery if initially elevated.
- Other laboratory and radiological examinations are of unproven benefit and should be restricted to patients with suspicious symptoms.

note

Levels of evidence [I–V] and grades of recommendation [A–D] as used by the American Society of Clinical Oncology are given

in square brackets. Statements without grading were considered justified standard clinical practice by the experts and the ESMO faculty.

literature

1. Ferlay J, Autier P, Moniol M et al. Estimates of the cancer incidence and mortality in Europe in 2006. *Ann Oncol* 2007; 18: 581–592.
2. Moertel CG, Fleming TR, Macdonald JS et al. Fluorouracil plus levamisole as effective adjuvant therapy after resection of stage III colon carcinoma: a final report. *Ann Intern Med* 1995; 122: 321–326.
3. Andre T, Boni C, Mounedji-Boudiaf L et al. Oxaliplatin, fluorouracil, and leucovorin as adjuvant treatment for colon cancer. *N Engl J Med* 2004; 350: 2343–2351.
4. Benson A, Schrag D, Somerfield M et al. American Society of Clinical Oncology recommendations on adjuvant chemotherapy for stage II colon cancer. *J Clin Oncol* 2004; 22: 1–12.
5. Twelves C, Wong A, Nowacki M et al. Capecitabine as adjuvant treatment for stage III colon cancer. *N Engl J Med* 2005; 352: 2696–2704.
6. Van Cutsem E, Tejpar S, Verslype C, Laurent S. Challenges in the adjuvant treatment for patients with stages II and III colon cancer. *ASCO educational book* 2006: 179–186.
7. Pfister D, Benson A, Somerfield M. Surveillance strategies after curative treatment of colorectal cancer. *New Engl J Med* 2004; 350: 2375–2382.
8. Desch C, Benson A, Somerfield M et al. Colorectal cancer surveillance 2005 update of an American Society of Clinical Oncology Practise Guideline. *J Clin Oncol* 2005; 23: 8512–8519.