

## Watson for Oncology를 이용한 다학제 진료 증례

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### 1. Case presentation

65세 남자 환자가 건강 검진으로 시행한 대장내시경에서 ascending colon cancer 발견되어 전원 되었다. 병리 조직학적 검사 결과 adenocarcinoma, moderately-differentiated로 나왔으며, CT 검사상 전이된 소견은 발견되지 않았다. 2016년 11월 22일 radical hemicolectomy를 시행하였고 stage 상 pT3, N0, M0 소견 보였으며, lymphovascular and perineural invasion이 있었고, EGFR, MSS 검사 결과 양성을 보였다. 환자 분이 Watson 다학제 진료를 원하여 2016년 12월 8일 Watson for oncology 진료를 하였고, Watson은 5-FU/leuovorin과 capecitabine을 가장 추천하였고, 그 다음으로 FOLFOX, CAPEOX, FLOX를 고려해 보라고 하였다. NCCN guideline에서는 T3, N0, M0이면서 lymphovascular invasion, perineural invasion 등의 high risk for systemic recurrence 있으면 Capecitabine, 5-FU/leuovorin, FOLFOX, CAPEOX, FLOX의 치료를 권유한다. Physician은 임상적 경험과 NCCN guideline을 토대로 Watson과 다른 FOLFOX로 결정하고 치료를 진행하고 있다.

### 2. Diagnosis

Ascending colon cancer IIa, high risk

### 3. Therapy and Clinical course

FOLFOX로 7차까지 잘 진행되고 있다.

### 4. Conclusion

Watson은 NCCN guideline과 Memorial Sloan Kettering cancer center 자료와 환자 정보를 토대로 candidate treatment option들을 정하고 Watson 만의 scoring algorithms을 통해 prioritized treatment option들을 보여준다. 하지만 algorithm을 정확하게 알 수 없고, Memorial Sloan Kettering cancer center 자료가

많이 사용되어 physician의 선택과 차이가 있을 수 있다.

**Key Words:** Watson, Cancer, Treatment

## REFERENCES

1. Wolmark N, Rockette H, Fisher B, Wicherham DL, Redmond C, Fisher ER, Jones J, Mamounas EP, Ore L, Petrelli NJ, The benefit of leucovorin-modulated fluorouracil as postoperative adjuvant therapy for priamary colon cancer: results from National Surgical Adjuvant Breat and Bowel Project protocol C-03. J Clin Oncol, 1993 Oct;11(10):1879-87
2. Andre T, Boni C, Mounedji-Boudiaf L, Navarro M, Tabernero J, Hickish T, Topham C, Zaninelli M, Clin gan P, Bridgewater J, Tabah-Fisch I, de Gramont A, Multicenter international study of Oxaliplatin/ 5-Fluorouracil/Leucovorin in the Adjuvant Treatment of Colon cancer (MOSAIC) investigators. Oxaliplatin, fluorouracil, and leucovorin as adjuvant treatment for colon cancer, N Engl J Med, 2004 Jun 3;350(23):2343-51.

MEMO

MEMO

## Chief Complaint

- A-colon cancer로 전원됨.



## Present Illness

- 외부 검진 대장내시경 검사상 A-colon cancer 발견되어 내원함.



### Patient Information

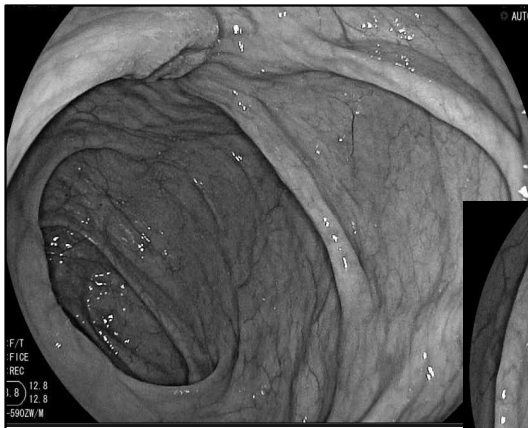
- PMH : Hypertension, DM
- FHx : none
- SHx : none
- P/E  
Abdomen : palpation of organ (-), Tenderness (-)

### Laboratory test

	2016-11-14		2016-11-14
Hb (g/dL)	14.5	AST (U/L)	25
PLT(/uL)	259k	ALT (U/L)	37
WBC(/uL)	5650	ALP (U/L)	48
	2016-11-14	T. Bil (mg/dL)	0.9
CEA (ng/mL)	0.90	r-GT (U/L)	34



Chest X-ray



외부 대장  
내시경 검사

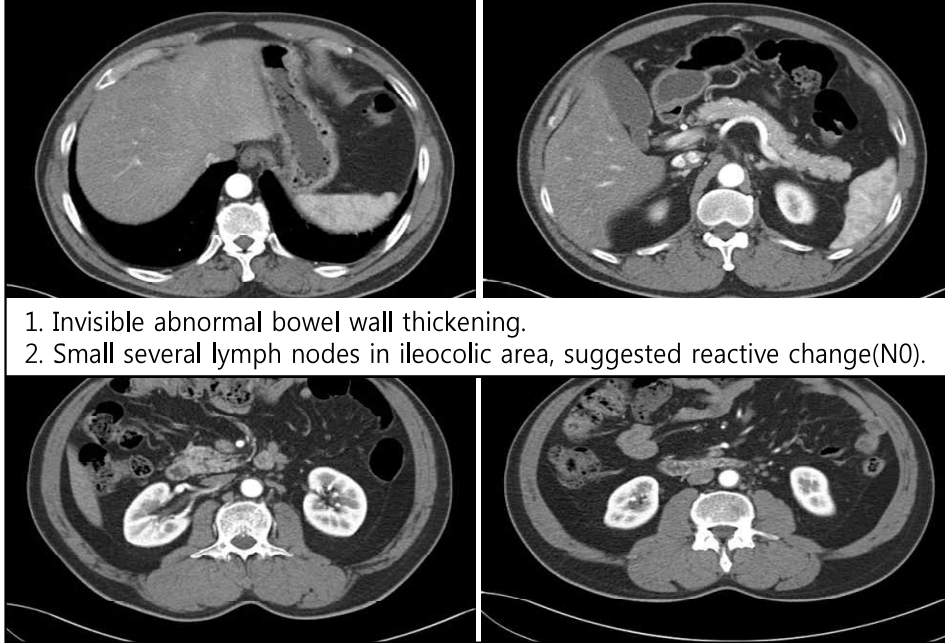


<Gross Description>  
받은 조직은 3개의 장생관 폴립조직으로 가장 큰 조직의 크기는 0.1X0.1X0.1cm 이었다. 모두 포매. (1)

<Microscopic Findings / Remarks>  
Recommend clinical correlation and further work-up studies or management.

<Diagnosis>  
Colon, ascending, colonoscopic biopsy;  
Consistent with adenocarcinoma, moderately-differentiated

## Abdominal CT



1. Invisible abnormal bowel wall thickening.
2. Small several lymph nodes in ileocolic area, suggested reactive change(N0).

## Operation - 2016. 11. 22.

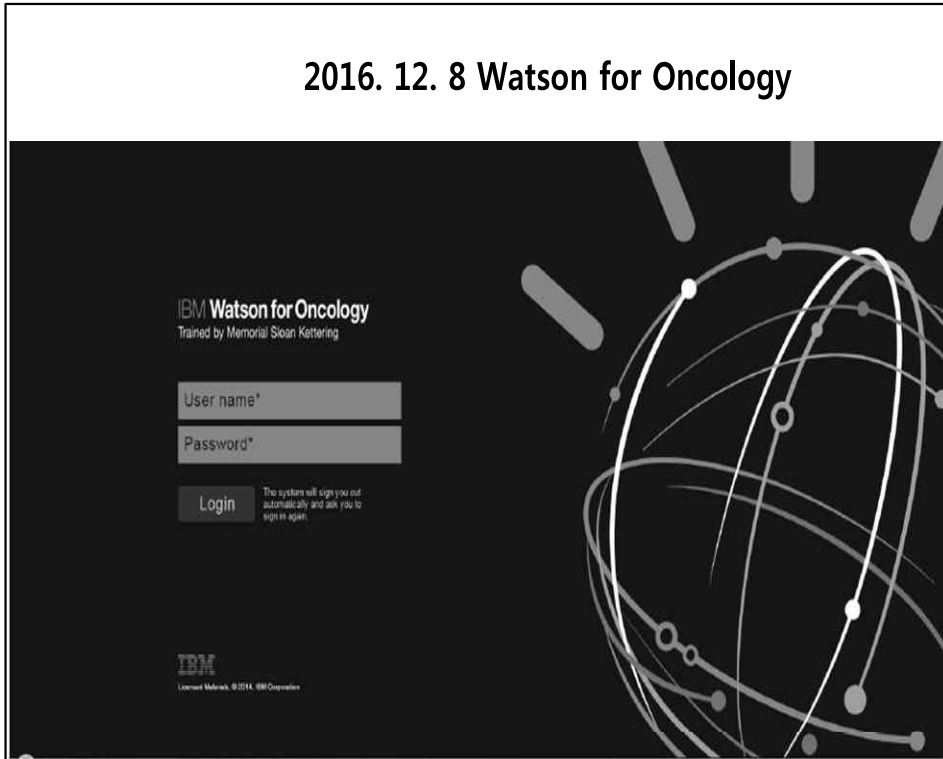
2016년 11월 22일 laparoscopic radical hemicolectomy

Pathology :

Colon, ascending, cecum, right hemicolectomy ;

1. Adenocarcinoma, moderately differentiated, 0.8 x 0.5 cm, with
    - 1) depth of invasion : invades subserosa or pericolic/perirectal adipose tissue (pT3)
    - 2) lymphovascular invasion
    - 3) perineural invasion
    - 4) no involvement of proximal, distal and circumferential resection margins
    - 5) no metastasis in 12 regional lymph nodes (0/12) (pN0)
- EGFR : Positive  
- MSS

## 2016. 12. 8 Watson for Oncology



## 2016. 12. 8 Watson for Oncology

DEMOGRAPHICS: Age: 65, Gender: Male, Performance status: 1 | DISEASE STATUS: Cancer type: Colon cancer, Cancer stage: IIA | TREATMENT HISTORY: Surgery: Yes, Chemotherapy: No | Ask Watson

Back to clinical information

Treatment Plan Options

Select a clinical trial

- Chemotherapy >
- Surveillance >

More treatment plan options

Timeline for Treatment Plan (shown in months)

Chemotherapy 0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0

Treatment Options  Recommended  For Consideration  Not Recommended

- Chemotherapy
  - 5-FU / leucovorin (fluorouracil / leucovorin) >
  - Capecitabine >
  - FOLFOX (fluorouracil / leucovorin / oxaliplatin) >
  - CapeOX (capecitabine / oxaliplatin) >
  - FLOX (fluorouracil / leucovorin / oxaliplatin) >

T3, N0, M0<sup>k</sup> (MSI-H or dMMR) → Observation

T3, N0, M0<sup>k</sup> (MSI-L or MSS and no high-risk features) → Clinical trial or Observation or Consider capecitabine<sup>n,o</sup> or 5-FU/leucovorin<sup>n</sup>

T3, N0, M0 at high risk for systemic recurrence<sup>l,m</sup> or T4, N0, M0 → Capecitabine<sup>n,o</sup> or 5-FU/leucovorin<sup>n,o</sup> or FOLFOX<sup>n,o,p,q</sup> or CAPEOX<sup>n,o,p,q</sup> or FLOX<sup>n,o,p,q,r</sup> or Clinical trial or Observation

T any, N1-2, M0 → FOLFOX<sup>n,o,q</sup> or CAPEOX<sup>n,o,q</sup> (both category 1 and preferred) Other options include: FLOX (category 1)<sup>n,o,q,r</sup> or Capecitabine<sup>n,o</sup> or 5-FU/leucovorin<sup>n,o</sup>

## Final Treatment Method by Physician

### ■ FOLFOX로 결정함

Data & Statistics Publications Administration Drug Information Print evi

#### Studies involving 5-FU/leucovorin (fluorouracil/leucovorin)

The benefit of leucovorin-modulated fluorouracil as postoperative adjuvant therapy for primary colon cancer: results from National Surgical Adjuvant Breast and Bowel Project protocol C-03.

Wolmark N, Rockette H, Fisher B, Wickerham DL, Redmond C, Fisher ER, Jones J, Mamounas EP, Ore L, Petrelli NJ. J Clin Oncol. 1993 Oct;11(10):1879-87. Pubmed PMID: 8410113.

[View paper abstract](#) [View in PubMed](#)

#### Trial Population Characteristics

- Study N: 1045

#### Survival Statistics

##### Results for arm receiving 5-FU/leucovorin (fluorouracil/leucovorin)

	Disease-Free Survival	survival
2 yr	84.4% (N=438, Total=521)	94.6% (N=491, Total=521)
3 yr	73% (N=379, Total=521) (95% CI 69 - 77)	84% (N=436, Total=521)

#### Studies involving FOLFOX (fluorouracil/leucovorin/oxaliplatin)

Oxaliplatin, fluorouracil, and leucovorin as adjuvant treatment for colon cancer.

André T, Boni C, Mounedji-Boudiaf L, Navarro M, Tabernero J, Hickish T, Topham C, Zaninelli M, Clingan P, Bridgewater J, Tabah-Fisch I, de Gramont A, Multicenter International Study of Oxaliplatin/5-Fluorouracil/Leucovorin in the Adjuvant Treatment of Colon Cancer (MOSAIC) Investigators. N Engl J Med. 2004 Jun 3;350(23):2343-51. Pubmed PMID: 15175436.

[View paper abstract](#) [View in PubMed](#)

#### Trial Population Characteristics

- Age of 18 to 75 years: 100%
- Cancer Stage: II (40.16%)
- Cancer Stage: III (59.84%)
- Study N: 2246

#### Survival Statistics

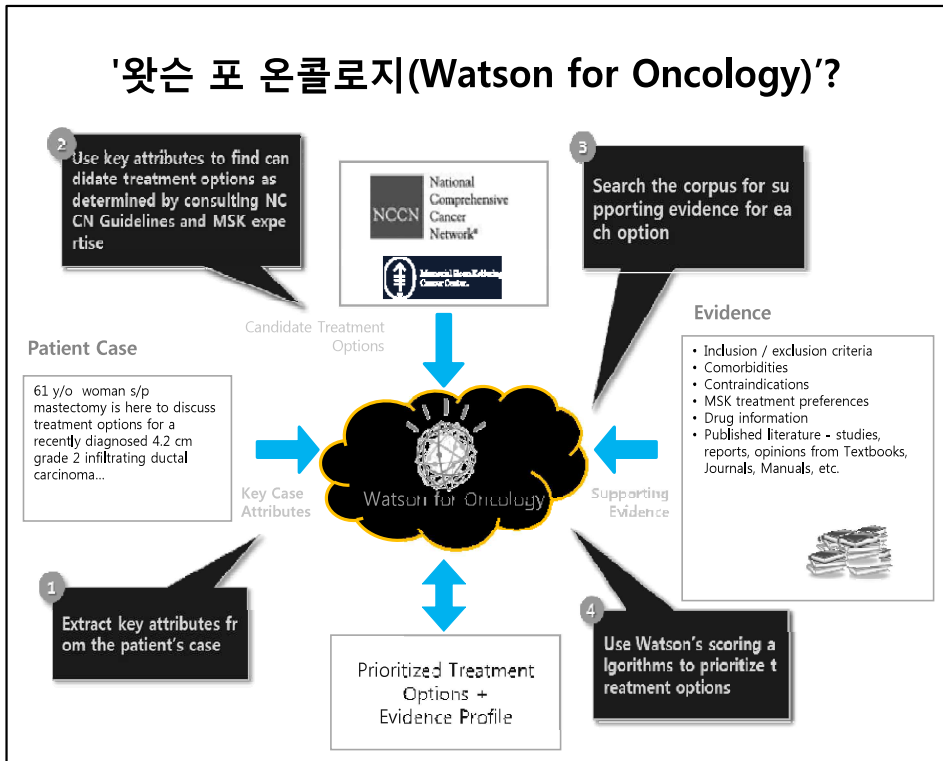
##### Results for arm receiving FOLFOX (fluorouracil/leucovorin/oxaliplatin)

	Disease-Free Survival	Overall Survival
3 yr	78.2% (N=878, Total=1123)	87.7%

## Watson for oncology







### Watson for oncology - Current Cancer Coverage

	Early Stage	Locally advanced		Recurrence		Metastatic			Recommendations		
		Neoadjuvant	Adjuvant	Local	Distant	1st Line*	2nd Line	3rd Line	Med Onc**	Surgery	Radiation
Breast	✓	✓	✓		✓	✓			✓		
Lung	✓		✓		✓	✓	✓	✓			
Colon	✓	N/A	✓		✓	✓	✓	✓	✓		
Rectal	✓	✓	✓		✓	✓	✓	✓	✓		
Gastric	✓	✓	✓		✓	✓	✓		✓		
Cervical	✓	✓	✓		✓	✓	✓		✓	✓	✓
Ovarian	17.1	17.1	17.1		17.1	17.1	17.1		17.1	17.1	

New for 16.11

\* 1<sup>st</sup> Line Metastatic in this table refers to patients who are newly diagnosed with metastatic disease  
 \*\* Med Onc: includes chemotherapy, endocrine therapy and targeted therapy where appropriate

Watson for Oncology - 2017			
	Now	Soon	Later
Cancer Coverage	•Breast •Lung •Colon •Rectal •Gastric •Cervical •Ovarian	•Breast •Lung •Prostate •Colon •Rectal •Gastric •N.H. Lymphoma	•Bladder •Liver •Esophagus •Pancreas •Kidney