Analysis and categorisation of PCCRCs using the WEO guidelines

Prof Matt Rutter
• No conflicts of interest to declare
Thanks

• David Beaton
• Iosif Beintaris
• Silvia Sanduleanu
• WEO PCCRC team

S Sanduleanu, C M C le Clercq, E Dekker, G A Meijer, L Rabeneck, M D Rutter, R Valori, G P Young, R E Schoen. On behalf of the Expert Working Group on

Outline

• WEO interval cancer/PCCRC work
  – Terminology
  – Different PCCRC analyses

• Illustrate these with our recent PCCRC analysis paper
• Developed an internationally standardised definition and taxonomy for interval CRCs

• Interval CRC defined as a “CRC diagnosed after a screening or surveillance exam in which no cancer is detected, and before the date of the next recommended exam”
The World Endoscopy Organisation Consensus Statements on Post-Colonoscopy and Post-Imaging Colorectal Cancer: recommendations on terminology, aetiology, categorisation, qualitative and quantitative review of cases.

Difference between PCCRCs and interval cancers

• Interval cancer
  – Cancer occurring between 2 screening tests

• Post-colonoscopy CRC (PCCRC)
  – Includes CRC detected at next colonoscopy
Aren’t they the same thing?

60 year old

- FIT POSITIVE
- COLONOSCOPY NORMAL

2 years later

SCREENING SUCCESS

NOT an interval cancer

SCREEN - DETECTED CANCER
Aren’t they the same thing?

- 60 year old
  - FIT POSITIVE
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- 2 years later
  - FIT POSITIVE
  - COLONOSCOPY CANCER
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- SCREEN-DETECTED CANCER
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Aren’t they the same thing?

- 60 year old
  - FIT POSITIVE
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- 2 years later
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- PCCRC
  - Original colonoscopy failure
  - Potential QA issue
3 PCCRC analyses

• PCCRC rate
  – large scale analysis of quality of colonoscopy

• PCCRC individual case (root cause) analyses
  – Most plausible explanation – why did the PCCRC occur?
  – Interval/non-interval sub-categorisation – appropriateness of & adherence to guidelines/programme
Utilization and reproducibility of World Endoscopy Organization post-colonoscopy colorectal cancer algorithms: retrospective analysis

AIMS

• Primary: test usability, reproducibility & outcomes of WEO PCCRC sub-categorisation & most plausible explanation in “real world” setting

• Secondary:
  • test the inter-rater reliability
  • provide practical advice for others embarking on this process

Authors

David Beaton¹ ©, Iosif Beintaris¹, Matthew D. Rutter¹,² ©
Methods

• All CRC cases diagnosed from January 2015 to December 2016 in a single organisation
  – Cross-referenced with local endoscopy & pathology databases to identify PCCRCs

• Assessed:
  – WEO most plausible explanation for PCCRC
  – WEO PCCRC interval/non-interval subtype categorisation

• Inter-observer agreement measured using Cohen’s kappa
  – Cases with inter-rater variation underwent panel discussion to attempt to reach consensus.
Results

- 527 patients with CRC → 48 PCCRCs
  - Median age 73 (range 48-93)
  - 44% female

- 10% of PCCRCs seen in “high risk” patients (IBD or genetic predisposition to CRC)

- Most preceding colonoscopies (65%) were requested to investigate lower GI symptoms

- 52% of PCCRCs in proximal colon
Most Plausible Explanation
Most Plausible Explanation

1. CRC diagnosis
   - Initial colonoscopy
   - Advanced adenoma: >10 mm +/or villous histology +/or high grade dysplasia
   - Interval from previous colonoscopy >4 years?
     - No: Likely new CRC
     - Yes: Advanced adenoma in same segment

2. Was advanced adenoma resected?
   - Yes: Likely incomplete resection of previously identified lesion
   - No: Detected lesion, not resected

3. Cecum intubated + adequate preparation
   - Yes: Possible missed lesion, prior examination adequate
   - No: Possible missed lesion, prior examination inadequate

4. Missed lesion, inadequate exam 17%
5. Likely new CRCs 33%
6. Incomplete polyp resection 0%
7. Detected polyp not resected 6%
8. Missed lesion, adequate exam 44%
Most Plausible Explanation

- **Missed lesion, inadequate exam (44%)**
- **Likely new CRC (33%)**
- **Incomplete polyp resection (0%)**
- **Detected polyp not resected (6%)**

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**CRC diagnosis**

- **Initial colonoscopy**

- **Advanced adenoma:**
  - >10 mm +/or villous histology +/or high grade dysplasia

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  - Yes -> Likely incomplete resection of previously identified lesion
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- **Cecum intubated + adequate preparation**

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- **Likely new CRCs**
Most Plausible Explanation

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**CRC diagnosis**

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    - No: **Possible missed lesion, prior examination inadequate**
Most Plausible Explanation

CRC diagnosis

Initial colonoscopy

Advanced adenoma:
>10 mm +/or villous histology
+/or high grade dysplasia

The modifying statement 'deviation from planned management pathway' can be added as applicable

Interval from previous colonoscopy
>4 years?

No → Likely new CRC

Yes → Advanced adenoma in same segment

Was advanced adenoma resected?

Yes → Cecum intubated + adequate preparation

No → Likely incomplete resection of previously identified lesion

Detected lesion, not resected
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Most Plausible Explanation

- Missed lesion, inadequate exam: 44%
- Likely new CRCs: 33%
- Incomplete polyp resection: 0%
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PCCRC Interval/non-interval Subcategorisation
Each PCCRC sub-type has different implications
### PCCRC Subcategorisation

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- Whilst all colonoscopy interval CRCs are PCCRCs, **only 15% of PCCRCs are interval CRCs**
  - Shows why PCCRC & interval cancer terms should not be used interchangeably
- Indicates either
  - inappropriately long screening/surveillance interval; or
  - suboptimal quality of initial colonoscopy
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- Unlike interval cancers, these are still potentially screening successes if early cancers - especially with rapidly-growing CRCs (IBD, Lynch) – whereas interval cancers are never screening successes.

- Indicates at least one of:
  - inappropriately long screening/surveillance interval
  - suboptimal quality of initial colonoscopy
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- Indicates suboptimal adherence to guidelines

- Can be:
  - clinician not making recommendation – either not applying guidelines, or deliberate decision to deviate from guidelines
  - patient decision not to proceed to further therapy or screening/surveillance
  - administrative errors – e.g. patient not recalled
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- 15%  
- 12%  
- 31%  
- 42%

- In our study (as in UK) most colonoscopies performed to assess symptoms - not offered a subsequent colonoscopy interval recommendation (unless they fulfil surveillance criteria)

- May prompt a review of whether subsequent screening/surveillance should have been offered
Lessons learnt

• Feasible for all services to collect this data and analyse cases
  – Decent inter-observer agreement - 97% (k=0.94) for most plausible explanation; 77% (k=0.67) for PCCRC subtype categorisation
  – A single clinician could perform these analyses (5 to 30 minutes per case), supported by panel-review for complex cases

• Do not confuse PCCRC rate methodology with individual case analyses
  – Unlike for PCCRC rate calculation, for individual case RCAs:
    • Even cases occurring within 6m of prior colonoscopy should be reviewed
    • 3y cut-off is not used
    • Also review earlier colonoscopies and sigmoidoscopies
Review of PCCRC cases using WEO recommendations can be performed accurately at a **local level** using readily available clinical information.

The majority of PCCRC cases were probable **missed lesions**.

The high number of **Non-interval type B PCCRCs** suggests a significant proportion of PCCRC cases could be avoided with adherence to recommended surveillance intervals.
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