Low prevalence of serrated polyposis syndrome in screening populations: a Systemic Review

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IM R4 김지유

Serrated polyps

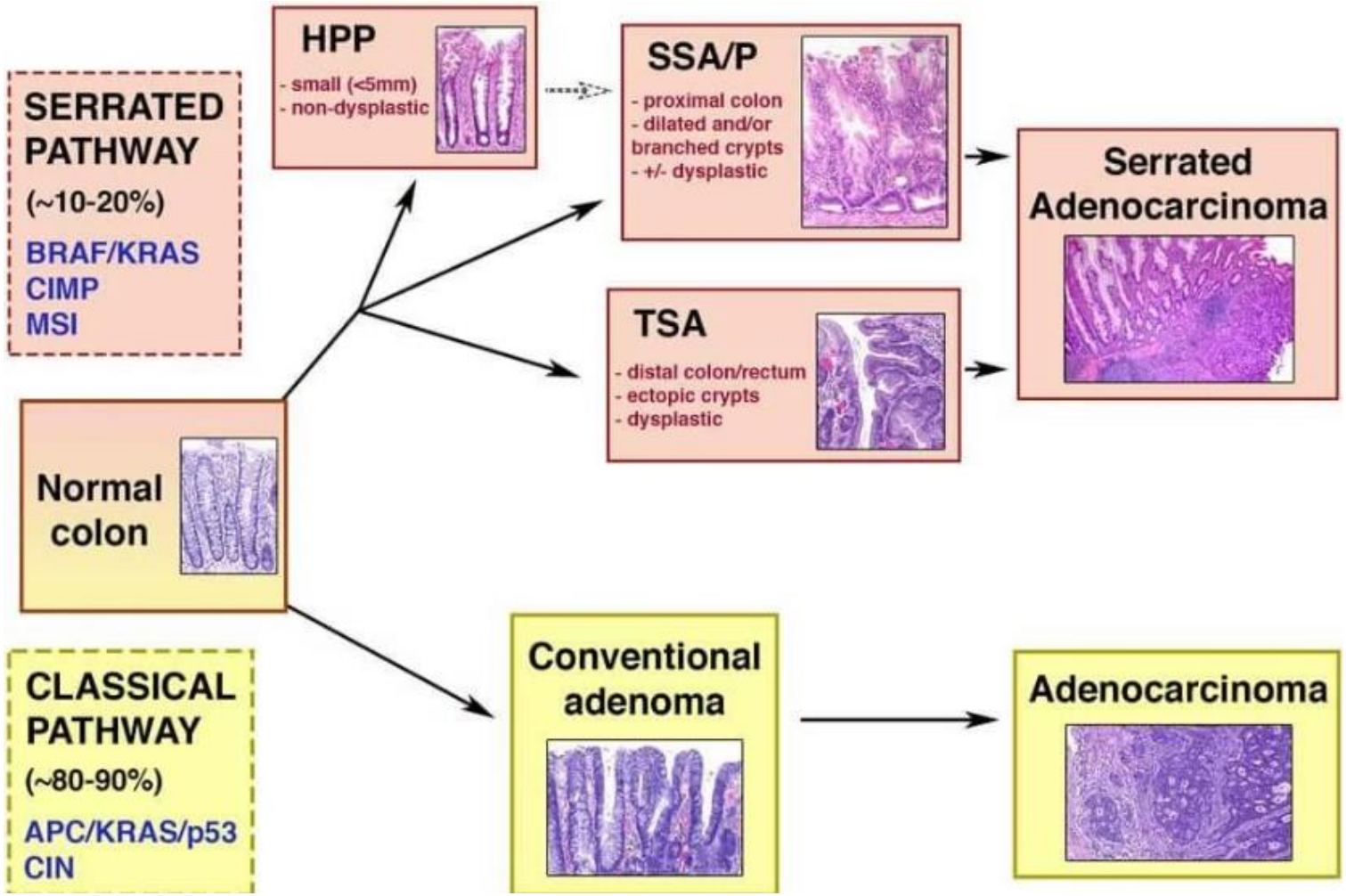
- Serrated polyps of the colon and rectum can be found in approximately 20% of average risk patients coming to screening colonoscopy and comprise:

  - ✓ **Hyperplastic polyps** – by far the most common. They are small and pale, usually left sided, and act more as a marker of significant proximal serrated lesions than being premalignant in themselves.

  - ✓ **Sessile serrated adenoma/polyps (SSA/P)** – larger, right sided lesions that are difficult to see endoscopically and can progress to cancer relatively rapidly.

  - ✓ **Traditional serrated adenomas (TSA)** – endoscopically more like adenomas, usually left sided and are premalignant in the same way as adenomas.

Serrated polyps



Serrated polyposis syndrome(SPS)

- SPS is associated with a high risk of colorectal cancer, not only in the affected patient but also family members. The carcinogenesis can be rapid.

- Diagnostic WHO criteria in 2010

Diagnostic WHO criteria in 2010
(1) At least 5 serrated polyps proximal to the sigmoid colon, of which two are at least 10 mm
(2) Any number of serrated polyps proximal to the sigmoid colon in an individual who has a first-degree relative with SPS
(3) At least 20 serrated polyps of any size distributed throughout the colon

Serrated polyposis syndrome(SPS)

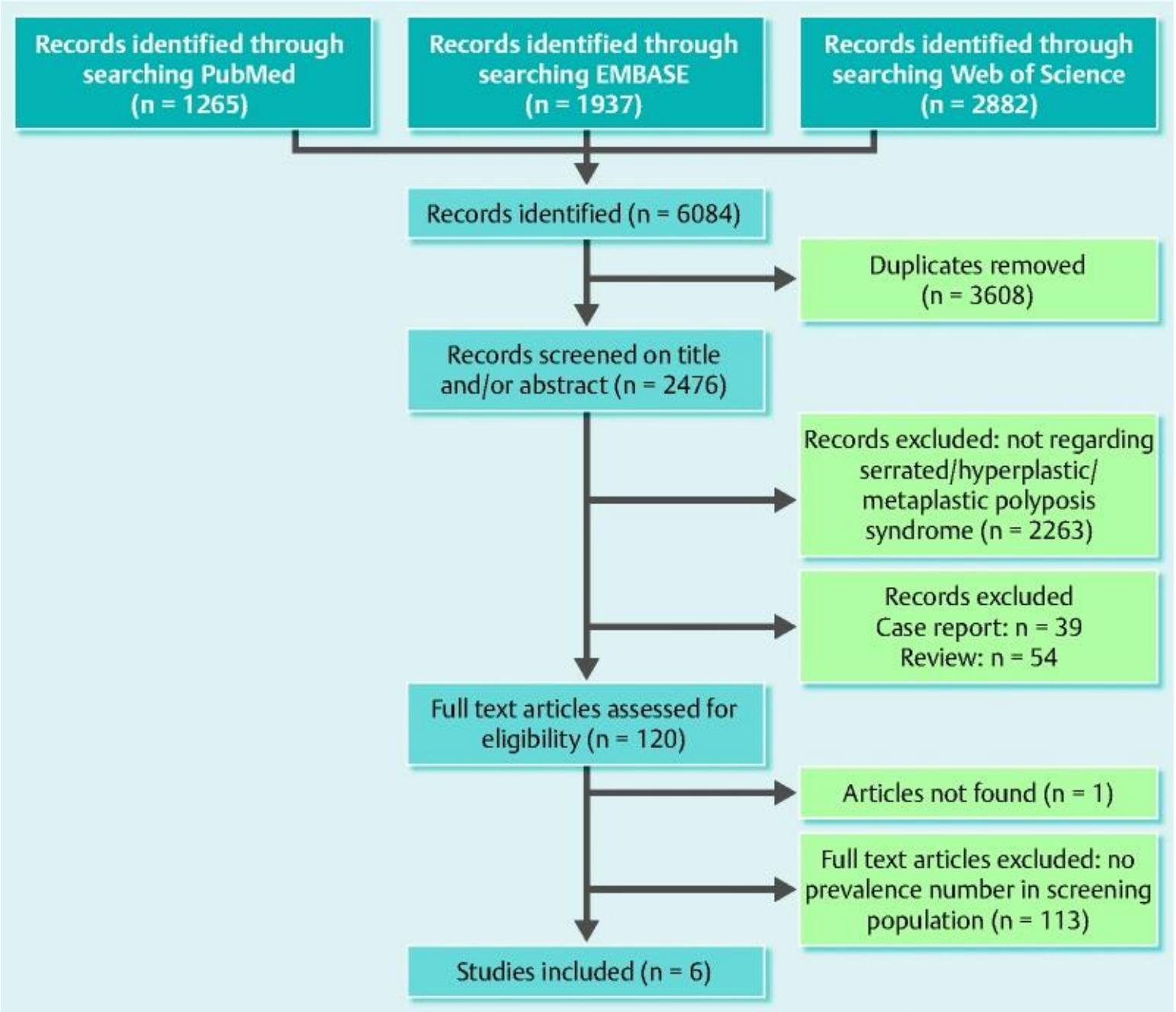
- **Prevalence for serrated polyposis syndrome(SPS)**
  : **1 / 3000** people screened by sigmoidoscopy
  → *but this value is debated.*
  No systematic discussion on the prevalence of SPS is available so far.

- **Aim**
  : To estimate the prevalence of SPS and the associated CRC occurrence, as defined by the previous and the new WHO criteria, in a systematic review that includes studies investigating SPS prevalence in screening populations.

Patients and methods

- Meta-analysis Of Observational Studies in Epidemiology (MOOSE)
- Systematic search - PubMed, EMBASE, Web of Science databases
- Up to February 2014
- Studies reporting the prevalence of SPS, as defined by WHO criteria, in screening populations were selected.

Study selection



Study characteristics

High risk criteria
- adenoma 1cm or larger
- three or more adenomas
- tubulovillous or villous histology
- severe dysplasia or malignant disease
- 20 or more hyperplastic polyps proximal to the distal rectum

First author, year	Country	Study period	Publication type	Study design	Screening method	Interest, years	Inclusion criteria
Lockett, 2001 [8]	United Kingdom	1994–1999	Conference abstract	Prospective	Sigmoidoscopy	55–64	Unclear
Orlowska, 2009 [13]	Poland	2000–2004	Conference abstract	Prospective	Colonoscopy	40–66	50–66 years: people in good general health and colorectal cancer was not suspected for a national screening program for colorectal cancer. 40–49 years: family history of cancer of any type
Kahi, 2012 [11]	USA	2000–2009	Full text	Retrospective	Colonoscopy	≥50	Average-risk patients
Hazewinkel, 2014 [12]	Netherlands	2009–2010	Full text	Prospective	Colonoscopy	50–75	Randomly selected screening-naïve individuals
Moreira, 2013 [15]	Spain	2009–2011	Letter to the editor	Retrospective	FIT	50–69	Cases with a positive FIT presenting for an institutional screening program
Biswas, 2013 [14]	United Kingdom	2010–2012	Letter to the editor	Retrospective	gFOBT	60–69 [16]	Patients with a positive gFOBT presenting for (NHS) bowel cancer screening

FIT, fecal immunochemical test; gFOBT, guaiac fecal occult blood test

Study characteristics

First author, year	Exclusion criteria	National screening program?
Lockett, 2001 [8]	Inability to provide informed consent; history or family history of colorectal cancer, adenomas, inflammatory bowel disease, or symptoms of colorectal cancer; severe or terminal disease; life expectancy less than 5 years; or sigmoidoscopy or colonoscopy within the previous 3 years	No
Orlowska, 2009 [13]	Age 50–66 years: recent changes in bowel habits, anemia, unexplained weight loss, bleeding in the lower gastrointestinal tract not attributable to hemorrhoids, characteristics that met the criteria for hereditary nonpolyposis colorectal cancer of familial adenomatous polyposis, inflammatory bowel disease, and colonoscopy within the preceding 10 years	Yes
Kahi, 2012 [11]	Patients undergoing colonoscopy for surveillance or diagnostic indications	No
Hazewinkel, 2014 [12]	Full colonic examination in the previous 5 years, scheduled for surveillance colonoscopy because of a personal history of CRC, adenomas, inflammatory bowel disease, end-stage disease with a life expectancy of less than 4 years	No
Moreira, 2013 [15]	Unclear	Yes
Biswas, 2013 [14]	Unclear	Yes

Risk of bias within studies

First author, year	1. Study design and sampling methods	2. Sampling frame	3. Sample size	4. Outcome criteria	5. Outcome assessment	6. Response rate and description of refusers	7. Statistical reporting	8. Applicability of study results
Lockett, 2001	-	-	-	+	+/-	+	+/-	–
Orlowska, 2009	+	+/-	-	+	+	+/-	+/-	+/-
Kahi, 2012	+/-	+/-	-	+	+/-	+/-	-	+/-
Hazewinkel, 2014	+	+	-	+	+	+	+/-	+
Moreira, 2013	+	-	-	+	+	–	+/-	+/-
Biswas, 2013	+	-	-	+	+	–	+	+/-

+ , low risk of bias; +/– , reporting not adequate; – , high risk of bias

Prevalence rates

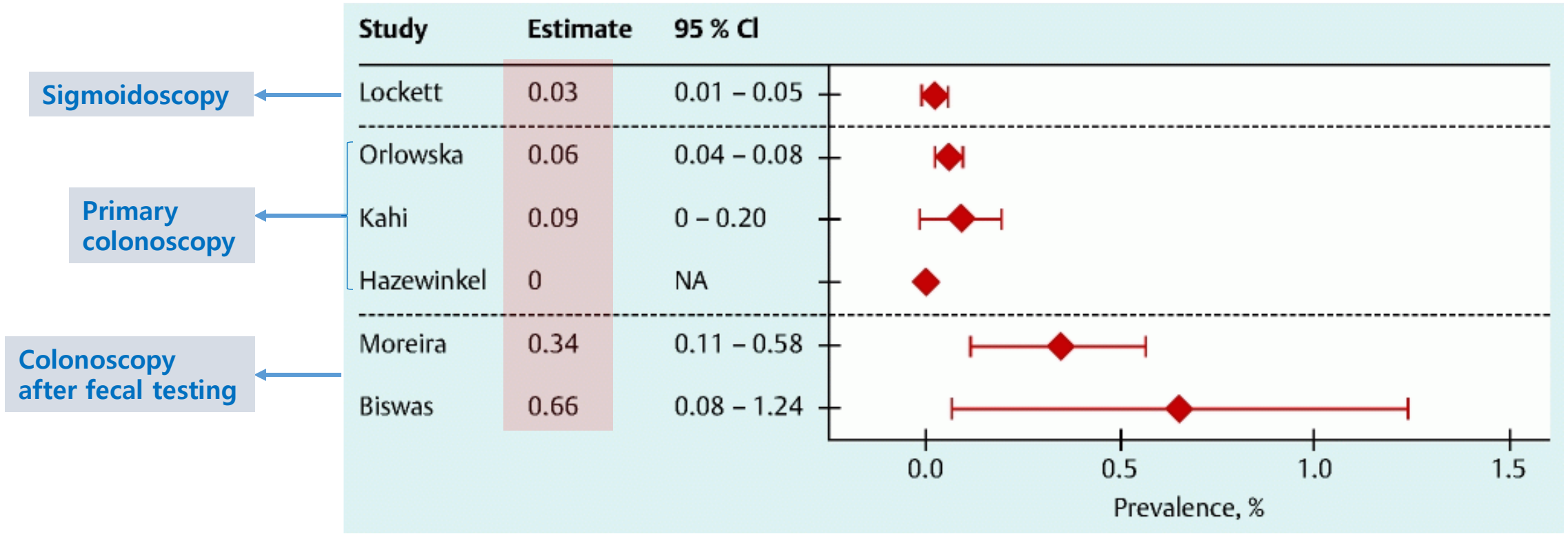


Fig.2 Prevalence of serrated polyposis syndrome (SPS) in screening programs for colorectal cancer

Adenomas and carcinomas

First author, year	Total patients, n	SPS patients	SPS patients with ≥ 1 adenoma, n (%)	SPS patients with CRC, n (%)	CRC in overall population, n (%)
Lockett, 2001	40674	12	5 (42%)	1 (8.3%)	125 (0.3%)
Orlowska, 2009	50148	28	2 (7%)	0 (0%)	416 (0.8%)
Kahi, 2012	3170	3	Not reported	0 (0%)	Not reported
Hazewinkel, 2014	1426	0	Not applicable	Not applicable	8 (0.6%)
Moreira, 2013	2355	8	3 (38%)	2 (25%)	Not reported
Biswas, 2013	755	5	4 (80%)	0 (0%)	Not reported

[1] 40674 participants underwent sigmoidoscopy

Discussion

- Important strengths of this review are that this is the first review on this topic and that we performed an extensive search for prevalence data.

- The most important limitation is the lack of available data.

Discussion

- The true prevalence of SPS is unclear because of the risk of bias across studies.
- The prevalence of SPS likely to be below 0.09% as derived from primary colonoscopy screening programs.
- The prevalence in pre-selected screening populations after positive fecal testing is higher, with reported values of 0.34% and 0.66 %.

Discussion

- The primary outcome of screening programs is the detection of CRC, with only 5.4% of screening-identified SPS patients presenting with synchronous CRC.
  - large difference compared with previous data (16% to 39%)
  - the screening participants are older and SPS patients with high risk of CRC were not included because they had been diagnosed earlier.
  - SPS is underdiagnosed in patients with CRC or large adenomas.

Discussion

- No difference in reported prevalence of SPS between the colonoscopy-based screening program that used the 2000 WHO criteria and those that used the 2010 criteria.

- Unawareness of the SPS criteria can be a contributing factor to missing this diagnosis. Additionally, information from previous colonoscopies, such as polyp size, location, and histology, is not always readily available.

Conclusion

- Few studies are available on the prevalence of SPS, therefore the actual prevalence remains uncertain.

- Large and high quality primary colonoscopy screening studies, reporting SPS prevalence in adequately described populations, are necessary for better estimation of the true prevalence of SPS in average-risk patients.

Conclusion

- Since several countries have implemented programs screening for colorectal cancer, an up-to-date estimate of the prevalence of SPS in different populations would be useful to predict the number of cases in various screening programs.