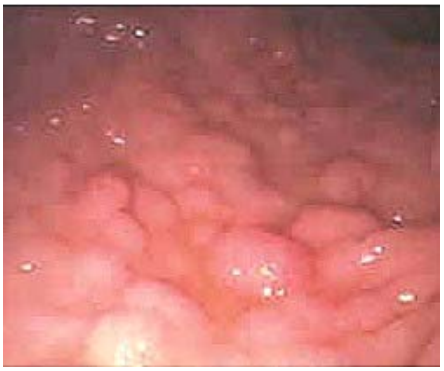
Polyposis and the MYH Gene

What is polyposis?

Polyposis simply means "multiple polyps."



An individual with polyposis has multiple polyps in the gastrointestinal tract (esophagus, stomach, colon, and small intestine). Polyps are abnormal growths that vary in size. Most often, polyps develop in the colon and less commonly they occur inside the small intestine and the stomach. In some families, polyps may be inherited (run in families), while in other families they are not inherited.

Most individuals with multiple colon polyps are suspected to have an inherited condition called Familial Adenomatous Polyposis (FAP). FAP is a dominant condition, meaning that an individual with FAP has a 50% chance of passing the FAP gene mutation (change) to each of their children. Individuals with FAP develop hundreds of adenomatous (pre-cancerous) polyps in the colon at a young age. Individuals with FAP have a near 100% lifetime risk of developing colon cancer unless the colon is removed. FAP is caused by mutations (changes) in the Adenomatous Polyposis Coli (APC) gene.

What is the MYH gene?

MYH is a gene which was recently discovered to be associated with polyposis.

The MYH gene is related to multiple polyps or polyposis. Mutations in the MYH gene have recently been discovered to be associated with a recessive form of polyposis. The recessive form of polyposis means that if both members of a couple have a mutation in the MYH gene they have a 25% chance of having a child with polyposis.

A recent article by Sieber et al. states that in testing 152 patients with multiple (3 to 100) polyps and 107 APC negative mutation patients with >100 polyps, the percentages of polyposis patients with mutations in the MYH gene is as follows:

- Patients with 3-100 polyps (4% had mutations in the MYH gene)
- Patients with 16-100 polyps (33% had mutations in the MYH gene)
- Patients with >100 polyps who were APC mutation negative (7.5% had mutations in the MYH gene)

Look for These Clues

Family history is an important risk factor for hereditary polyposis.

When reviewing your family history, it is important to consider both your father's and your mother's side of the family since an altered gene can be inherited from either parent. Gather information on all types of cancer because other cancers can occur as part of a hereditary polyposis syndrome. Certain "red flags" may suggest a higher risk for hereditary polyposis. These include:

- Having a family member with multiple colon polyps
- Genetic testing of the APC gene has revealed no mutation
- Lack of a dominant pattern of colon cancer in the family

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Who should be tested for the MYH gene?

Genetic testing of the MYH gene may be appropriate for families with polyposis who tested negative for the APC gene.

It is difficult to know if a family has FAP due to a mutation in the APC gene, or if a family has polyposis due to mutations in the MYH gene. When looking at a family, individuals with FAP caused by a mutation in the APC gene have similar symptoms and findings as people with polyposis caused by mutations in the MYH gene. Sieber et al. reported that clinical care of patients with mutations in the MYH gene should be similar to that of patients with FAP due to a mutation in the APC gene.

You or your family members may want to consider MYH genetic testing if you have 15-100 adenomatous polyps and/or tested negative for the FAP gene (APC). It is believed that 33% of individuals who have 15-100 polyps will test positive for mutations in the MYH gene.

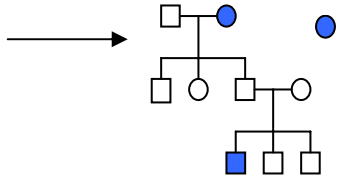
For more information about FAP and other hereditary colon cancer syndromes, please call the **Mid-Atlantic Cancer Genetics Network** toll free at 1-877-880-6188 or visit our Web site at http://www.MACGN.org

What does this mean for me?

Talk with your health care provider to determine if genetic testing is right for you and your family.

MYH genetic testing may be useful if you or your family fit any of the descriptions below:

- Your family history shows an autosomal recessive pattern of polyposis;
- You have already received inconclusive APC test results;
- You have 15-100 adenomatous polyps.



Genetic testing and genetic counseling for polyposis due to mutations in the MYH gene is currently available. Genetic counselors interpret information about genetic diseases or disorders, analyze inheritance patterns and risks of occurrence, identify high-risk family members, and review available options for prevention, screening, genetic testing, and treatment. If you or your family members are interested in learning more about the MYH gene and genetic testing please contact Linda Thompson at (410) 502-7082 to schedule an appointment in our clinic.

References

Sieber OM, Lipton L, Crabtree M, Heinimann K, Fidalgo P, Phillips RK, Bisgaard ML, Orntoft TF, Aaltonen LA, Hodgson SV, Thomas HJ, Tomlinson IP (2003) Multiple colorectal adenomas, classic adenomatous polyposis, and germ-line mutations in MYH. New England Journal of Medicine 348(9):791-9.

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