Genomics Education Programme

NHS
Health Education England

MUTYH-associated polyposis

Key facts

- MUTYH-associated polyposis (MAP) is a recessively inherited disorder, resulting in a high risk of colorectal adenomatous polyps and cancer, together with other manifestations.
- This is a rare condition affecting approximately 1 in 30,0000 individuals.
- MAP is very similar to familial adenomatous polyposis, but has a different mode of inheritance, and generally leads to a lower number of adenomas and later development of cancer, though there is considerable overlap between the conditions.
- Lifelong surveillance is required to manage the cancer risk in the large bowel and upper GI tract.

Clinical features

- The main feature of MAP is the development of tens to hundreds of adenomatous polyps in the large bowel. Most patients develop adenomas between the ages of 30 and 50.
- The lifetime risk of colorectal cancer is approximately 50-90% without intervention. Some patients with very few or no visible adenomas have developed colorectal cancer.
- About 35% of individuals with MAP have ampullary and duodenal adenomas, with around 2-5% developing to cancer later in life.
- There are a number of other features, including hyperplastic colorectal polyps, as well as a small increase in the risk of ovarian, breast, endometrial and possibly some other cancers.

Diagnosis

- Most patients present with symptoms caused by numerous large polyps or colorectal cancer, and are found to have MAP when colonoscopy and genetic testing is performed.
- Some affected individuals are identified as being at risk because they are from a family known to have MAP, and are offered predictive genetic testing. This is usually done at around 18 years of age.

Genetic basis and genetic testing

- MAP occurs when an individual has inherited pathogenic variants in both copies of the *MUTYH* gene.
- The *MUTYH* gene codes for a protein that is a component of the oxidative DNA damage repair pathway.
- Carrier frequency in most populations is between 1 in 100 and 1 in 200 people.
- Predictive testing can be done in families with identified pathogenic variants, and testing of partners is offered to define risk to offspring.

Clinical management

- Colonoscopy should be started between the ages of 18 and 20, and repeated annually.
- Many patients can be managed by endoscopic removal of polyps for many years, or even indefinitely.
- If adenomas become endoscopically unmanageable, surgery is required, including removal of the colon, and occasionally the rectum as well.

- After surgery, any remaining large bowel or ileoanal pouch reconstruction requires annual endoscopic surveillance and removal of polyps as they enlarge.
- Upper GI endoscopic surveillance should be started at the age of 35, and repeated at intervals determined by adenoma burden.

Direction to further reading, guidelines and patient groups

- Guidelines for the management of hereditary colorectal cancer from the British Society of Gastroenterology (BSG)/Association of Coloproctology of Great Britain and Ireland (ACPGBI)/United Kingdom Cancer Genetics Group (UKCGG). Monahan KJ, Bradshaw N, Dolwani S Hereditary CRC guidelines eDelphi consensus group, et al. Gut 2020;69:411-444.
- Patient support group
- St Mark's Hospital Polyposis Registry

This information is intended for educational use and was current in June 2019. For clinical management, it is recommended that local guidelines and protocols are used.

Produced in collaboration with Birmingham Women's NHS Foundation Trust's Clinical Genetics department and The Polyposis Registry, St Mark's Hospital.