Large multicenter study suggests new genetic markers for Crohn's disease

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What is believed to be the largest study of its kind for the genetic roots of inflammatory bowel diseases has suggested new links to Crohn's Disease as well as further evidence that some people of Jewish descent are more likely to develop it.

The study examined changes in DNA associated with the two most common forms of inflammatory bowel disease (IBD): Crohn's Disease (CD), which is most frequently marked by inflammation of the final section of the small bowel (ileum) and parts of the colon, and ulcerative colitis (UC), an inflammation of the internal lining of the rectum and colon.

Results of the study, published in this month's edition of Genes and Immunity, included information gleaned from 993 families with IBD, 244 of whom were Ashkenazi Jews. Up to 30 percent of people with IBD in the United States are estimated to have a family history of the condition, and about 25 percent of these families have both CD and UC in the family. People of Ashkenazi Jewish descent are at least twice as likely to develop a form of IBD and are more likely to have familial disease.

"This increased risk for some Jewish people makes our study and results especially significant since this is the first sample size of Jewish families, 244, that was large enough to identify novel gene regions for familial predisposition in this ethnic group," says Johns Hopkins gastroenterologist and genetic investigator Steven R. Brant, M.D., senior author of the study.

By analyzing common DNA variations known as single nucleotide polymorphisms, or SNPs, the team found evidence for genes causing familial Crohn's Disease in the study population specific to Ashkenazi Jewish families with CD on previously identified areas of chromosomes 1 and 3. They also identified a never-before-identified region of chromosome 13 that was shared by both Jewish and non-Jewish families with CD. Evidence for chromosomal regions that may be linked to UC on chromosome 2 and 19 for Jewish and non-Jewish families was also noted, according to Brant.

"What makes these results especially significant is not only the large sample size but also the method we used for screening, namely the use of a high-density, single-nucleotide polymorphism genome-wide linkage process, says Brant." The new process is 10 times faster than older methods at searching the number of variations across the genome, he added.

Up to now, Brant says, no gene regions implicated in IBD were specific to Ashkenazi families, and genetic evidence pointing to why Ashkenazi Jews are twice as likely to get the disorder was lacking. The two genetic regions identified on chromosomes 1 and 3 were specific to Ashkenazi CD and unrelated to known IBD genes.

Although further study is needed to narrow down which specific genes are the major players, Brant says it's already clear that they are in the right "neighborhood" to search for IBD/CD susceptibility genes.

Source: Johns Hopkins Medical Institutions