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Editorial comment

Genetic susceptibility to postherniotomy pain. The influence of polymorphisms in the Mu opioid receptor, TNF-α, GRIK3, GCH1, BDNF and CACNA2D2 genes

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Persistent postoperative pain is a problem affecting almost a third of all patients undergoing surgery. The underlying pathophysiology of postoperative pain comprises prolonged inflammation and nerve damage. In this issue of the *Scandinavian Journal of Pain*, Kalliomäki and coworkers [1] examine the association between six single nucleotide polymorphisms (SNPs) and development of persistent postherniotomy pain. All the SNPs examined in the study have earlier been suggested to be associated with persistent pain. Patients with persistent postherniotomy pain were found to have a higher frequency of the TNF-α rs1800629 A allele than pain-free patients. Hence, the study shows a significant association between a specific SNP in the promoter of the TNF gene and risk for persistent pain following inguinal hernia surgery.

Earlier studies suggest that the rs1800629 A allele affects the binding of several transcription factors and therefore may be associated with increased expression of TNF-α [2,3]. Interestingly, the rs1800629 SNP, i.e. the G>A base substitution in position -308, has previously been reported to induce a two-fold greater promoter activity [2]. The increased frequency of this "gain of function" TNF-α SNP [2] supports the hypothesis that the TNF-α A allele promotes inflammation [4] and contributes to development of persistent neuropathic pain following surgical procedures.

The study of Kalliomäki and coworkers may be interesting for clinicians interested in neuropathic pain. The study supports previous data, according to which release of TNF following nerve injury may promote nerve growth and persistent pain [5]. However, whether or not the TNF-α SNP in patients really affects the inflammatory process, and how this relates to the neuropathic mechanisms, remains to be investigated. Moreover, the study was based on *a priori* hypotheses and one-tailed tests, without correction for multiple testing. Therefore, the findings need to be corroborated by further studies including other groups of patients with neuropathic pain.

Conflict of interest

None declared.

References

[1] Kalliomäki M-L, Sandblom G, Hallberg M, Grönbladh A, Gunnarsson U, Gordh T, Ginyag H, Nyberg F. Genetic susceptibility to postherniotomy pain. The influence of polymorphisms in the Mu opioid receptor, TNF-alfa, GRIK3, GCH1, BDNF and CACNA2D2 genes. Scand J Pain 2016;12:18.

[2] Kroeger KM, Carville KS, Abraham LJ. The -308 tumor necrosis factor-alpha promoter polymorphism effects transcription. Mol Immunol 1997;34:391–9.

[3] Kroeger KM, Steer JH, Joyce DA, Abraham LJ. Effects of stimulus and cell type on the expression of the -308 tumour necrosis factor promoter polymorphism. Cytokine 2000;12:110–9.

[4] Menges T, Konig IR, Hossain H, Little S, Tchatalbachev S, Thierer F, Hackstein H, Franjkovic I, Colaris T, Martens F, Weismuller K, Langefeld T, Stricker J, Hempelmann G, Vos PE, Ziegler A, Jacobs B, Chakraborty T, Bein G. Sepsis syndrome and death in trauma patients are associated with variation in the gene encoding tumor necrosis factor. Crit Care Med 2008;36:1456–62, e1451–1456.

[5] Ohtori S, Inoue G, Ito T, Koshi T, Ozawa T, Doya H, Saito T, Moriya H, Takahashi K. Tumor necrosis factor-immunoreactive cells and PGP 9.5-immunoreactive nerve fibers in vertebral endplates of patients with discogenic low back pain and Modic Type 1 or Type 2 changes on MRI. Spine (Phila Pa 1976) 2006;31:1026–31.

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