



## Effect of cold upon upper gastrointestinal hemorrhage resulting from liver cirrhosis and its mechanism

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Received: July 14, 1998

Revised: August 22, 1998

Accepted: September 13, 1998

Published online: October 15, 1998

### Abstract

**AIM:** To study the effect of cold upon 98 cases (89 males, 9 females) of upper gastrointestinal hemorrhage resulted from liver cirrhosis and its regularity and mechanism.

**METHODS:** From April 7 to October 8 and October 9 to April 6 in 1992-1996, we performed a statistical morbidity of upper gastrointestinal hemorrhage resulted from liver cirrhosis. In the same period, at the temperature of 20-30 °C and 5-15 °C, we studied the nailfold microcirculation of 151 cases of liver cirrhosis and analyzed its 16 kinds of values and its sensitivity to the change of temperature.

**RESULTS:** Among the 98 patients with liver cirrhosis, the morbidity of upper gastrointestinal hemorrhage happened in 72 cases from October 9 to April 6 (73.0%), showing a concentrated tendency; While that happened in 26 cases from April 7 to

October 8 was (26.5%), showing a disperse tendency and there was a significant difference when compared with each other ( $P < 0.01$ ). After performing examinations of nailfold microcirculation of 115 patients with liver cirrhosis, we found that, the numbers and length of capillary and the velocity of blood flow in capillary of nailfold microcirculation measured at temperature 5-15 °C ( $7.9 \pm 1.8/\text{mm}$ ,  $109 \pm 24 \mu\text{m}$ ,  $387 \pm 161 \mu\text{m/s}$ ) were less than that measured at temperature 20-30 °C ( $9.6 \pm 2.1/\text{mm}$ ,  $138 \pm 31 \mu\text{m}$ ,  $808 \pm 213 \mu\text{m/s}$ ,  $P < 0.01$ ). It showed that the effective blood circulatory volume blood in shallow tissues had reduced to some extent. So we deduced that in deep tissues would increase relatively.

**CONCLUSION:** In cold weather, the patients with liver cirrhosis will suffer from upper gastrointestinal hemorrhage easily. The mechanism is that the change of temperature effects the redistribution of blood of the human body. When the weather temperature drops in the surroundings of the subjects, the effective blood circulatory volume of shallow tissues reduces to some extent; while that of deep tissues increases relatively. This will result in the pressure of portal vein system and its collateral circulation increase. The esophagogastric varices can easily break and hemorrhage.

**Key words:** Gastrointestinal hemorrhage/etiology; Gastrointestinal hemorrhage/physiopathology; Liver cirrhosis/complications; Cold upon

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Li ZZ, Wei CD, Wang Y, Xing C, Guo H, Cai W, Liu H. Effect of cold upon upper gastrointestinal hemorrhage resulting from liver cirrhosis and its mechanism. *World J Gastroenterol* 1998; 4(Suppl2): 80 Available from: URL: <http://www.wjgnet.com/1007-9327/full/v4/iSuppl2/80.htm> DOI: <http://dx.doi.org/10.3748/wjg.v4.iSuppl2.80>

E- Editor: Li RF



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