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• 中文關鍵字	表皮生長因子; 十二指腸潰瘍; 大鼠; 黏膜
• 英文關鍵字	Epidermal growth factor (EGF); Duodenal ulcer; Rat; Mucosa
• 中文摘要	本研究主要是測定內生性 EGF(Epidermal growth factor;EGF)與口服外生性 EGF,對醋酸誘發十二指腸潰瘍老鼠之腸道黏膜修復所扮演的角色。本實驗以雄性 Sprague-Dawley 老鼠(約 200-250 克重),老鼠隨機分成四組(每組十隻,包括病理切片與拍照各一隻):控制組(無潰瘍、無口服 EGF),無潰瘍口服 EGF 組,潰瘍無口服 EGF 組,及潰瘍口服 EGF 組,另外有十隻不接受任何手術之正常老鼠,作爲 Negative control。所有無潰瘍老鼠皆接受假手術(Sham operation),潰瘍老鼠則以醋酸誘發。醋酸誘發潰瘍手術的進行:以巴比妥酸鹽麻醉下打開腹腔,並以一塑膠管(內徑 4.5 mm)裝盛醋酸 30%、70 .mu.L,沾附十二指腸外層十秒(由 Pilot study 決定其醋酸的使用劑量與時間),如此會造成醋酸接觸範圍的 Mucosa 與 Submucosa 層細胞壞死,但不會傷及肌肉層,或使周圍器官穿孔或壞死。在移開醋酸接觸後,縫合腹腔,並使老鼠從麻醉中恢復,手術當天(day 0)只給水,隔天(day 1)再給予正常食物。平日記錄老鼠體重、攝食量與飲水量。手術隔天後,每天於下午三點左右將 Recombinant human EGF,劑量爲 60 .mu.g/kg,溶在無菌的去離子水 35 mL,置於潰瘍老鼠的飲水中餵食,並記錄精確的口服劑量。無口服 EGF 的老鼠則口服相同量的無菌去離子水。爲測定潰瘍修復速率、EGF 分泌、與胃中酸鹼質的改變,在第 1、5、10、15 天時犧牲(約下午三點左右)。當天老鼠以巴比妥酸鹽麻醉,收集血液,測量胃壁酸鹼值,以刀片刮下胃及十二指腸黏膜,稱其濕重。以測定十二指腸黏膜中 DNA、RNA 及 Protein 的含量,作爲評估黏膜生長的指標。結果顯示,不論有無潰瘍、投予 EGF,對老鼠體重、胃中酸鹼值、攝食量均無影響,僅有在手術實施後兩天內,潰瘍組老鼠攝食量明顯低於無潰瘍組。在手術實施後第一天,潰瘍組老鼠黏膜的 DNA 含量明顯低於無潰瘍組;第五天時,各組之 DNA 含量並無差異、RNA 含量以添加 EGF 之潰瘍組最低、蛋白質含量以無添加 EGF 無潰瘍組最高;第十天時,無潰瘍有 EGF 組之 RNA 含量顯著高於無潰瘍無 EGF 組、而有 EGF 有潰瘍組的蛋白質含量高於無潰瘍有 EGF

組。第十五天時,各組之 RNA 含量並無差異、潰瘍並投予 EGF 組之 DNA 含量顯著高於其他各組、且其蛋白質含量高於無潰瘍投予 EGF 組。在各自組別的時間恢復效應中,有潰瘍有 EGF15 天組的 DNA 與 RNA 顯著高於同組的 5 天、10 天組,而第 10 天的蛋白質顯著高於同組的 5 天、15 天組。

- 英文摘要

This study was to investigate the mucosal healing effects of endogenous and exogenous epidermal growth factor (EGF) on acetic acid-induced duodenal ulcer in rats. Sprague-Dawley rats (200-250 g) were randomly divided into four groups: control (no ulcer without oral EGF), oral no ulcer with oral EGF, ulcer without oral EGF, and ulcer with oral EGF groups (n=10, including one rat for pathological examination and photograph, respectively). In addition, 10 normal rats did not be operated as the negative control. The rats without ulcer were done by sham operation, and the rats with ulcer were induced by acetic acid. The rat was anesthetized by thiopentone sodium and the abdomen was opened. A plastic tube (4.5 mm inner diameter) with 70 .mu.L of 30% acetic acid was applied to the surface of the duodenum for 10 sec (the dosage of acetic acid and the applied duration were determined by the pilot study), which causes immediate necrosis of the entire thickness of the mucosa and submucosa exactly within the area of acetic acid application without penetration or perforation to the muscular layer and the surrounding organs. After removal of acetic acid, the abdomen was closed, and the rat was allowed to recover from the anesthesia. The rat with ulcer received only water on the day of operation (day 0), and was fed a normal diet ad libitum next day (day 1). The weight, food intake, and water intake of the rats were routinely recorded. The next day after operation at approximately 3:00 PM, the rats were orally administration of recombinant human EGF (60 .mu.g/kg) in 35 mL sterile deionized drinking water, and oral EGF intake was exactly recorded. To determine the healing rate, EGF secretion, and the changes of pH values in the stomach, the rats were sacrificed on day 1, 5, 10, and 15 at around 3:00 PM. After the rats were anesthetized by thiopentone sodium, blood was collected, pH values of the gastric wall were determined, and the wet weight of the mucosa was measured. The amounts of DNA, RNA, and protein in the mucosa were determined as the indicator of mucosal growth. The results showed that oral EGF had no effects on body weight, pH values of the stomach, and food intake in the rats with or without ulcer. Food intake decreased in the rats with ulcer compared to those without ulcer after 2 days of operation. The amount of mucoal DNA significantly decreased in the rats with ulcer compared with those without ulcer on day 1. No significant differences were observed in DNA content on day 5. The ulcerous rats with oral EGF had the lowest RNA content, and the sham-operated rats without oral EGF had the highest protein content on day 5. The sham-operated rats with oral EGF had significantly higher RNA content than those without oral EGF, and the ulcerous rats with oral EGF had higher protein content than the sham-operated rats with oral EGF on day 10. On day 15, RNA content was not different, the ulcerous rats with oral EGF had significantly higher DNA than others, and higher protein content than the sham-operated rats with oral EGF. In the time-course study, the ulcerous rats with oral EGF had significantly higher DNA and RNA content on day 15 compared with those on day 5 and 10, and higher protein content on day 10 compared with those on day 5 and 15.