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# Effects of epidermal growth factor and glutamine-supplemented parenteral nutrition on the small bowel of septic rats.

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## Abstract

1. The effects of parenteral nutrition with or without glutamine supplementation and epidermal growth factor treatment (0.15 microgram/g body weight) was studied in the small bowel of septic rats after 4 days. 2. Septic rats infused with glutamine-supplemented parenteral nutrition with or without epidermal growth factor treatment survived sepsis significantly better than other septic rats given parenteral nutrition. The cumulative percentage of deaths over 4 days in septic rats infused with glutamine-supplemented parenteral nutrition was 20% (without epidermal growth factor) and 15% (with epidermal growth factor) compared with 50% in septic rats treated with parenteral nutrition without glutamine and 35% in septic rats given parenteral nutrition without glutamine but with epidermal growth factor treatment. 3. Glutamine-supplemented parenteral nutrition with or without epidermal growth factor treatment resulted in improved nitrogen balance in septic rats. The cumulative nitrogen balance over the 4 day period was the least negative as compared with other groups of septic rats. 4. Septic rats given parenteral nutrition with glutamine, epidermal growth factor or glutamine and epidermal growth factor exhibited marked increases in intestinal net rates of utilization of glutamine (P less than 0.001) and production of ammonia (P less than 0.001) compared with septic rats given parenteral nutrition without glutamine and/or epidermal growth factor treatment. 5. Septic rats given parenteral nutrition with glutamine, epidermal growth factor or glutamine and epidermal growth factor exhibited significant increases in jejunal wet weight (by 32.4-40.6%), DNA content (by 24.2-34.7%), protein content (by 29.1-50.0%), villus height (by 16.3-26.4%) and crypt depth (by 20.3-29.6%) compared with other groups of septic rats