Research Update

Food for thought in Kingston study

Total parenteral nutrition, which is used widely to provide nutritional support for critically ill and surgical patients in hospital, does not appear to save more lives than a standard oral diet or intravenous fluids. In fact, it may actually increase the risk of death in critically ill patients, according to a meta-analysis by researchers at Ontario's Kingston General Hospital (*JAMA* 1998;280:2013-9).

Total parenteral nutrition (TPN) involves protein and a source of nonprotein energy, with or without lipids, that is administered intravenously. It is often used as a nutritional supplement or as the sole source of nutrition for critically ill patients who cannot tolerate oral or tube feeding, or are not taking in enough nutrients to meet protein and energy requirements.

"There are good data to suggest enteral feedings are preferred to TPN in critically ill patients," explains Dr. Daren Heyland, the study's principal author. "We see TPN used quite a bit in this setting and this caused us to reflect, 'What is the evidence supporting this?' "

With physicians Shaun MacDonald and John Drover and dietitian Laurie Keefe, he looked at 26 randomized trials comparing TPN with a usual oral diet plus intravenously administered dextrose. The trials involved patients who were either critically ill or had undergone surgery.

Pooled results show that use of TPN has no effect on overall mortality rates. While it appears to lower complication rates somewhat, this finding was not statistically significant. However, there were significantly fewer complications in malnourished patients who received TPN.

When the results were analysed according to prespecified subgroups, some alarming findings emerged. In critically ill patients (as opposed to those who had undergone surgery) there was a much higher mortality rate among those receiving TPN instead of standard care. "The findings are quite compelling that, in the subgroup of critically ill patients, it's actually harmful," Heyland emphasizes.

Furthermore, trials with higher methods scores and trials published since 1989 showed no effect of TPN on mortality or complication rates; only trials with lower methods scores and trials published before 1989 showed a benefit from TPN.

"If you rely on later, well-done studies," says Heyland, "I would submit that we shouldn't be using TPN in critically ill patients with an intact GI tract, or at least that we need to be more circumspect in our use of it. But this contradicts current clinical practice.

"We need to study this more, because the existing data suggest that we're doing more harm than good." — *C.J. Brown*

In the news . . .

Tobacco's overseas toll

Two epidemiologic studies from China have investigated the burden of illness and death due to skyrocketing tobacco use in that country (*BMJ* 1998;317:1411-22, 1423-4). They have found that tobacco now causes 13% of deaths in men (expected to rise to 33%), but only 3% of deaths in women. Two-thirds of Chinese men start smoking before age 25. If these patterns continue, about 100 million Chinese men are expected to die from tobacco-related causes. A prospective study will follow the effects of smoking in China.

E. coli *hides out*

Escherichia coli is a major cause of bladder infections, which affect 7 million people each year in the US alone. Researchers have now discovered that the bug uses a unique strategy to burrow into the bladder wall, where it can evade antibiotics (*Science* 1998;282:1494-7). The implicated *E. coli* strains have surface filaments, called type 1 pili, that allow them to attach to host cells on the bladder wall. This means that the infection can persist, becoming chronic with relapsing symptoms.

It came from New York

Hantavirus pulmonary syndrome — the mouse-borne illness that kills about half of its victims — is thought to be caused by 2 virus strains. The Sin Nombre virus, which has caused most known cases, is carried by deer mice, and a second virus, Black Creek Canal virus, is carried by the Florida cotton rat. Now a third virus has been discovered. New York 1 virus was found on an island off the coast of New York, where it is carried by the white-footed mouse. A new study shows that it is a distinct virus that can cause hantavirus pulmonary syndrome (*J Clin Microbiol* 1999;37[1]:122-6). The finding highlights the growing problem of hantaviruses in mice, and the concomitant danger to humans.