

Gangrene bug "killed 35 heroin users"

Bryan Christie *Edinburgh*

The likely cause of an infection that has killed 35 injecting heroin users in Britain and Ireland in recent weeks has been identified as *Clostridium novyi* type A, a bacterium previously associated only with serious infection during wartime.

An international effort to locate the source of the infection has isolated the bacterium from nine infected drug users in Glasgow, and, although other cases are still being investigated, scientists are confident that they have now traced the cause of the deaths.

C novyi type A is present in soil and dust and is a well recognised cause of infection in sheep, cattle, and other animals. It rarely poses a problem for humans in normal circumstances, but serious outbreaks have occurred during wartime.

In the first world war it proved to be the cause of 40% of cases of gas gangrene, and it also affected soldiers in the second world war.

"This is a case of an old bacterium finding a new niche in which to cause trouble as a result of a new form of human behaviour," said Dr John Hood, consultant microbiologist at Glasgow Royal Infirmary.

Scientists believe contaminated batches of heroin from a common source are responsible for the recent outbreak. The clostridium bacteria in the heroin seem to have been able to survive being mixed with citric acid and heated—the process used to prepare the drug for injection.

All of the cases have occurred after injection into muscle, and, as these are anaerobic bacteria that grow only in the absence of oxygen, it seems that conditions were ideal for the bacteria to multiply and produce powerful toxins that have led to the deaths.

Professor Brian Duerden, medical director of the Public Health Laboratory Service, said: "As far as we know, this is the first time this bacterium has ever caused an outbreak of infection in drug injectors."

The first cases were reported in Glasgow at the beginning of May, and work in tracing the source has involved close collaboration between laboratories in Britain and Ireland and at the



Soldiers in the first world war became infected with the same bug that is now killing heroin users

Centers for Disease Control and Prevention (CDC) in Atlanta.

Dr Jai Lingappa, epidemic investigations officer at the CDC, said: "A lot more work still needs to be done to clarify how exactly the *Clostridium novyi* is contributing to the illness. We are looking forward to the results of culturing the heroin under a variety of conditions to see if we can isolate the clostridia and other bacteria. We also want to learn more about why these people became sick and others didn't."

In all, 74 cases with the same clinical features have been reported so far, and there were no signs at the time of going to press that the outbreak was over. New cases were still being reported in Glasgow and in parts of England.

The investigators have no idea which heroin has been contaminated or how much of it has still to be used, and they have repeated advice to drug users not to inject (17 June, News Extra at bmj.com). □

US cancer institute funds trial of complementary therapy

Deborah Josefson *San Francisco*

The US National Cancer Institute, through its office of Complementary and Alternative Medicine, is funding phase III clinical trials of a controversial treatment for advanced pancreatic cancer.

The treatment protocol, the Gonzalez regimen, involves a programme of dietary modification, nutritional supplements, and "detoxification" through coffee enemas. Patients with stage II-IV pancreatic cancer are being enrolled.

The study was initially established in 1993, when Dr Nicholas Gonzalez submitted selected unpublished results of his cancer therapy to the National Cancer Institute. The initial cohort involved 11 patients with diverse cancers who were treated with his regimen.

Anecdotal evidence led Dr Gonzalez to concentrate his efforts on pancreatic cancer, which he thought was more responsive to nutritional therapy than other types of cancer.

Preliminary data showed that patients with pancreatic cancer who were treated by the Gonzalez regimen survived an average of 17.5 months more than those who received conventional chemotherapy.

On the basis of the results of this preliminary study, 90 patients with pancreatic cancer refractory to surgery were randomised to one of two arms: 45 patients received intravenous chemotherapy with the nucleoside inhibitor drug gemcitabine for 30 minutes once a week for seven weeks; the other 45 patients were enrolled in the nutritional arm, which

involved ingesting up to 150 dietary supplements daily and taking coffee enemas. The supplements included animal glandular extracts, vitamins, trace minerals, papaya, and magnesium citrate. Pancreatic enzymes were also administered.

Both the study and its sponsors are controversial. Detractors point out that, although Dr Gonzalez is a physician, he has never gone beyond the basic medical degree in terms of residencies or board certification.

His protocol, moreover, is based on a theory promulgated by the Scottish anatomist John Beard in the early years of the last century and popularised by a dentist, William Kelley, in the 1980s. This theory holds that cancer is one disease emanating from ectopic germ cells, which are allowed to grow due to a deficiency of proteases.

According to this theory, supplemental treatment with pancreatic enzymes is required to digest the cancerous cells. Coffee enemas are given to "stimulate"

the liver to detoxify the cancers and to reduce the incidence of the tumour lysis syndrome.

This theory flies in the face of the modern understanding of neoplasia, which sees cancer as multiple diseases with genetic and environmental bases.

Despite unproved theories, the alternative regimen has received attention and an aura of credibility. Pancreatic cancer is rarely curable, so any regimen that has shown a possibility of increasing survival is worth studying.

Moreover, the National Center for Complementary and Alternative Medicine is mandated to fund alternative and complementary treatments and subject them to the same rigorous review as conventional treatments. It has done this through funding wings in various universities.

The phase III trial is being conducted through a \$1.4m (£930 000) grant given to Columbia University's Rosenthal Center for Alternative Medicine in New York. □