

Deaths following transfusion may be linked to antibodies

By KATHLEEN KERR
Newsday

Blood donated by women who have been pregnant several times — more than 1 million such donors give each year — may contain dangerous antibodies that can kill transfusion recipients.

Following the deaths of 55 transfusion recipients over nine years, the Food and Drug Administration recently warned physicians that female blood donors who have had multiple pregnancies may carry antibodies that can trigger a rare but fatal lung condition — transfusion-related acute lung injury, or TRALI.

In one case, the blood from just one woman caused two deaths and 11 non-fatal cases of TRALI.

The deaths, between 1992 and 2001, pose a serious problem for the blood banking community.

About one-third of the nation's 3.6 million female blood donors, or 1.2 million women, have had multiple pregnancies. And there is no quick, reliable way to screen donors' blood for the TRALI antibodies.

The loss of so many donors could devastate an already dwindling blood supply. So far, officials have refrained from prohibiting women with multiple pregnancies from donating.

"I don't want to press the panic button, but it is clearly one of the most important transfusion problems in the developed world," said Dr. Mark Popovsky, associate professor of pathology at Harvard Medical School.

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Women exposed to fetal white blood cells during pregnancy or childbirth form antibodies that protect them against the foreign cells. But those antibodies can trigger transfusion-related acute lung injury, or TRALI, in some transfusion recipients, mostly through transfused plasma.

While women with three or more pregnancies are the most likely to develop the antibodies, those with just two pregnancies can produce them too.

Transfusion experts suspect many more TRALI deaths have occurred. They estimate one in every 5,000 plasma transfusions ends up as a case of TRALI and that 5 to 10 percent of TRALI cases end in death. With more than 3.3 million plasma transfusions nationwide annually, that would mean as many as 660 TRALI cases and as many as 66 deaths every year.

In October, Kathryn Zoon, director of the Food and Drug Administration's Center for Biologics Evaluation and Research, issued the government's warning, which said: "Because of misdiagnosis and/or underreporting, the full scope of TRALI is not known."

The warning received no public attention, possibly because it came at a time when the country's health care concerns were focused on the anthrax scare that followed the Sept. 11 terrorist attacks.

The country's two main blood collection organizations, the American Red Cross and America's Blood Centers, say laboratory workups to detect the antibodies wouldn't make sense. They would take weeks and cost about \$360 each, or \$360 million for the 1.2 million female blood donors with multiple pregnancies.

Dr. Leslie Halness, a medical officer in the Food and Drug Administration's Center for Biologics Evaluation and Research, said the agency does not prohibit women who have had multiple pregnancies from donating.

For TRALI to occur, a number of things must happen.

A fetus receives genes from both father and mother. If the mother, either when she gives birth or because of small placental leaks during pregnancy, is exposed to fetal white blood cells from the father, her immune system forms antibodies to protect her against the so-called foreign invaders.

The problem arises if the mother later donates blood to someone with the same antigens, or proteins, as her baby. The mother's antibodies bind with the white blood cells of some transfusion recipients, setting off a reaction that causes extreme breathing difficulty, lung failure and, sometimes, death.

When a TRALI case is reported, the blood used is traced to donors, who are prohibited from giving again. Any remaining blood is no