Success with half-matched transplants

The bone marrow transplant considered most likely to succeed is the graft between identical twins or other siblings sharing genes at key locations, called major histocompatibility sites (HLA). But for most patients there is no perfectly matched donor. John A. Hansen reported at the recent American Red Cross Annual Scientific Symposium in Washington, "We have begun to break some of the rules of HLA typing in a gradual, cautious manner."

Hansen described 78 leukemia patients who received less than perfectly matched bone marrow treated in the conventional manner at the Puget Sound Blood Center, Fred Hutchinson Cancer Research Center in Seattle. The majority of grafts came from a parent or sibling, but the group included grafts from an uncle, a great aunt, a son and an unrelated donor. All the donors shared with the recipient at least one set of HLA genes—a child, for example, inherits (and thus shares) one set from each parent. In the cases studied, measured markers indicated the donor and recipient also shared some, but not necessarily all, of the second set of genes. Among the sites called A, B, C and D-DR, there was one or no mismatch between donor and recipient.

"Results between HLA phenotypically identical [no mismatch] and HLA 'incompatible' [one mismatch] transplants were not different," Hansen says. In no-mismatch cases, 36 percent of 11 patients survived, and in the one-mismatch cases, 22 percent of 67 were alive after, on the average, 800 days. These results do not appear significantly different from those expected for similar patients receiving marrow grafts from "HLA genotypically identical" siblings (such as identical twins), report Hansen, E. Donnall Thomas and colleagues. They found a far greater difference in success between patients whose leukemia was in remission at the time of the transplant (43 percent survival) and those who were experiencing a relapse (9 percent survival). Hansen concludes that in carefully selected patients, transplanting imperfectly matched marrow is feasible. He and colleagues are now investigating marrow transplants between patients mismatched at two sites. He says there are likely to be greater difficulties the less closely matched the marrow.

Integrity in bone marrow transplant

A heretical view of bone marrow transplant is being advocated by a Swiss scientist. It emphasizes the balanced interactions among bone marrow cells. Most procedures currently in use either carefully match the donor and recipient or use drugs or antibodies to destroy the bone marrow cells capable of attacking the recipient's tissue (SN: 10/16/82, p. 244). With these techniques, still there is frequently serious graft-versus-host disease.

The destruction of specific bone marrow cells during transplantation comes out of "very superficial logic," Walter Pierpaoli of the University of Zurich told scientists at the National Institutes of Health in Bethesda, Md. "Bone marrow is a complex organ. You want to move it intact," he says. "Graft-versus-host disease is an expression of a deficient or disturbed hematopoiesis [blood cell formation]."

Pierpaoli reports success—long-lived healthy animals—after transplanting the complete set of bone marrow cells between mice of different strains. The key is supplying the recipient, whose own bone marrow has been destroyed by radiation, with a mix of biological substances, which Pierpaoli calls marrow regulating factors. This unidentified material is obtained from marrow cells suspended in a solution.

Pierpaoli views analysis of the marrow regulating factors as "exploration of a new continent, the bone marrow microenvironment." In addition to the clinical implications, as yet untested, for bone marrow transplants, the technique has provided animals containing mismatched cells, valuable for basic experiments in immunology.

New prostate surgery spares potency

Although prostate cancer—the second most common cancer in men—can be cured if detected early and if the entire prostate gland is removed, many patients choose less effective therapy because complete prostate removal usually leads to impotency (inability to have an erection, to ejaculate or both).

Now, though, there is good news for prostate cancer patients who need a total prostate excision: a Baltimore urologist has developed a surgical technique in which the prostate can be cut out while sparing potency.

Several years ago Patrick C. Walsh, chairman of urology at the Johns Hopkins Medical Institutions, determined which nerves cause an erection and ejaculation. The nerves, whose role had been suspected before but never proved, are located between the rectum and prostate gland and are branches of the pelvic plexus (a network of nerves in the pelvic area). He then designed the operation in which the prostate is removed while these nerves are spared. So far he has had an 83 percent success rate with it in prostate cancer patients. He reported it for the first time at the recent American Urological Association meeting in Las Vegas.

John Grayhack, chairman of neurology at Northwestern University Medical School in Chicago, is also using the technique, Walsh told SCIENCE NEWS.

Sex and the 'senile vagina'

Vaginal atrophy is a common problem among postmenopausal women. It is characterized by a variety of vaginal changes, including loss of tissue elasticity and fewer mucous membranes. These changes in turn can cause pain during intercourse. Sexual activity has now been found to help counter such atrophy.

Sandra Leiblum and colleagues at the University of Medicine and Dentistry of New Jersey-Rutgers Medical School in Piscataway suspected that sexual inactivity might partially contribute to the "senile vagina," as they describe the atrophied postmenopausal vagina. So they studied the effect of sexual activity on vaginal health in 52 postmenopausal women. Subjects were divided into two groups: sexually active (intercourse three or more times monthly) and sexually inactive (intercourse less than 10 times a year). The sexually inactive women were inactive because of the lack of a sexual partner. Two gynecologists rated the subjects according to a vaginal atrophy index. As the researchers report in the April 22/29 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, fewer sexually active women suffered vaginal atrophy than did the sexually inactive ones.

Sounding out fetal sex

During the past six years scientists have successfully used diagnostic ultrasound (sound waves) to determine the sex of human fetuses in the womb. First they could make such assessments only during the latest weeks of pregnancy. But now they can make them as early as 16 to 24 weeks.

During 1981 Gunther Plattner and colleagues at the Hôtel Dieu Hospital in Cornwall, Ontario, used ultrasound to visualize the genitalia of 61 fetuses between 20 and 24 weeks of age. They successfully determined the sex in 57 of the cases (93 percent), they report in the April OBSTETRICS AND GYNECOLOGY.

Although scientists are pursuing the ultrasound determination of fetal sex largely out of "vicarious interest," Plattner says, the technique *does* promise to have one practical application once it approaches 100 percent accuracy. This would be the replacement of amniocentesis (the withdrawal of fetal cells from the womb) as a method to see whether a fetus suspected of having a sex-linked genetic disease, such as hemophilia, is of the vulnerable sex.