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ACCIDENTAL TRANSPLANTATION OF MALIGNANT TUMOR FROM A DONOR TO MULTIPLE RECIPIENTS[1]

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Recently an ancient pathway in transplantation was accidentally retrod when a malignant tumor that was undiagnosed in the lifetime of a cadaveric multiple organ donor was transplanted to several recipients of various organs. The following is an account of the subsequent tragic events.

Case Report

A 36-year-old woman died of an apparent spontaneous cerebral hemorrhage. Her past medical history was significant only for multiple spontaneous abortions. Her liver, heart, and kidneys were transplanted into four different recipients in three different transplant centers.

The liver recipient

The liver was transplanted on April 25, 1986, into an 18-year-old woman whose native liver had been destroyed by non-A, non-B chronic active hepatitis. Her operation and postoperative course were unremarkable, and she was discharged 27 days later with normal liver function tests on cyclosporine 450 mg twice a day, prednisone 15 mg a day, hydralazine 50 mg four times a day, clonidine 0.1 mg twice a day, and furosemide 40 mg a day.

Seven weeks postoperatively on June 19, 1986, the patient began having nausea, vomiting, and abdominal pain, but no fever. She was readmitted to the hospital. Chest roentgenogram, blood analyses, lumbar puncture, and cholangiogram were normal. The graft vessels were patent by ultrasonography. The ultrasound detected an echogenic area in the right lobe of the liver not confirmed by computerized tomography.

Her symptoms continued, and a repeat chest roentgenogram obtained on July 8, 1986, showed a small infiltrate in the right middle lobe. Although the patient was still afebrile and the sputum culture showed normal flora, cefazolin was started empirically. On July 13, eleven weeks after transplantation, the patient began to complain of shortness of breath, dyspnea on exertion, and hypoxemia, with an arterial pO_2 of 47 mmHg. A diffuse interstitial and alveolar pulmonary infiltrate compatible with an opportunistic infection rapidly developed, but a specific diagnosis could not be established. The patient was placed on a ventilator. Repeat computerized

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tomography now showed an area of inhomogeneity in the posterior portion of the right lobe of the liver. She died on July 19, 1986, 85 days after transplantation.

The findings at autopsy included a technically perfect transplantation with no evidence of graft rejection. A malignant trophoblastic tumor (choriocarcinoma) was present in the right lobe of the liver and extensively throughout both lungs. There was no evidence of tumor in the ovaries or the uterus, and there were no products of conception in the uterus, fallopian tubes, or ovaries. Stored preoperative serum and postmortem serum from the recipient were then analyzed for beta human chorionic gonadotropin (B-HCG). Preoperatively, the results were negative, but 273,270 mIU/ml was found in the autopsy serum. An autopsy had not been done on the donor. However it was possible to study stored donor serum; the beta HCG level was 4880 mIU/ml.

Kidney and heart recipients

This information was reported to the procurement agency. On giving the information to the other participating institutions, it was learned that both kidney recipients had recently been readmitted for abdominal pain and fever. They underwent transplant nephrectomies, and both grafts were found to contain choriocarcinoma. One of the patients had disseminated disease and died a short time later. The other recipient had tumor confined to the kidney and is alive, without evidence of metastatic disease, on methotrexate chemotherapy five months after transplantation. The heart recipient is alive and well with no evidence of carcinoma after five months.

Conclusion

Dissemination of tumor and viruses by transplantation is a well-known and greatly feared problem. The transplantation of tumor from donor to renal recipient was shown to occur as early as 1964 (1–4). Because of the young age of most donors, silent malignancies are rare. When present in this youthful population, the tumor itself most commonly would be the cause of death—and therefore, under most circumstances, would eliminate the victim as a donor. In the case reported here the only clue to the malignancy was the retrospective connection between the multiple spontaneous abortions and the choriocarcinoma. No autopsy was performed, and no abnormalities consistent with choriocarcinoma were noted at the time of the multiple organ removal.

When expendable organs such as kidneys have been transplanted, stopping the immunosuppression and removing the organ have been reported sometimes to be curative (2), although not always (4). When organs are not expendable, chemotherapy may be an option. The discontinuation of all immunosuppression almost certainly would lead to rejection and to the need for retransplantation. If the malignancy were only in the transplanted organ, retransplantation could be curative.

As the results of transplantation continue to improve, so too will the demand for organs. It is hoped that the cadaveric organ pool will increase with this demand, so that only the most desirable donors will be used. However, it is inevitable that occasionally tumors or infectious agents will be transplanted with a lethal outcome. Rapid screening methods for tumor and viruses could limit this kind of problem. Donors should have a complete autopsy after completion of organ removal.

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