Unarrested Passage of Lymphoma-Leukemia Cells Through Liver and Kidney

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A series of studies were performed to study the factors responsible for leucocytosis in leukemia. Several factors may play a role: excessive production of neoplastic leucocytes in marrow or lymph nodes: inadequate destruction of leucocytes once the blood stream is invaded: inadequate filtration of leucocytes by different organs. Experiments were performed to test the last possibility,- to see if the liver and kidney can effectively remove neoplastic tumor cells from the blood stream. The transplantable Murphy-Steven lymphosarcoma and Lewis lymphoma were used in rats. These tumors grow locally and subsequently become leukemias. In experiments on the liver, a suspension of tumor cells was injected into the portal vein, and simultaneously blood was drawn from the vena cava just above the liver. Similarly, in testing the kidney, tumor cells were injected into the aorta above the renal arteries, and at the same time blood was drawn from the renal vein.

Blood obtained in this way was injected into other animals of the same species. If they developed tumors, it meant that tumor cells had passed immediately through the liver or kidney of the first animals.

The results revealed immediate transhepatic and transrenal passage occurred with both tumors used, the incidence approximated 100%. It is concluded that lymphoma-leukemia cells can pass unarrested through the circulation of both liver and kidney. The data indicate that an important factor in the leukocytosis of leukemia is the inability of organs to filter the cells out of the circulation.