SCAN EVIDENCE OF ORGAN INVOLUTION AND IMPROVEMENT OF HYPERSPLENISM

IN HODGKIN'S DISEASE FOLLOWING SPLENIC ARTERY LIGATION

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The increasing use of exploratory laparotomy and splenectomy for Hodgkin’s disease (1) probably means that cases will be encountered in which the spleen cannot be removed for technical reasons. We wish to report such a case and to note the marked change in splenic size and improvement in hyper-splenism produced by ligation of the splenic artery.

CASE REPORT

This 33-year-old mother of three children had the diagnosis of Hodgkin’s disease established by biopsy of a left neck mass 2 years before the present admission. Her classification at that time was 1A, and she was given 4,000 R of x-rays to the cervical, axillary and mediastinal regions. She was relatively well for 10 months when pruritis and night sweats occurred. Eleven months later she presented with a left pleural effusion which was tapped, and Thorotepa was installed into the cavity. A pancytopenia was noted at that time. On admission, her white blood cell count was 3,100, her platelet count was 55,000 and her hematocrit was 32. A chest film showed a minimal left pleural effusion. A spleen scan (Fig. 1) revealed an organ 20 cm long with a large defect near the hilus. Because of this widespread involvement, her classification was probably 4B. The pancytopenia suggested hypersplenism. Consistent with this were the following data: (1) The $^{51}$Cr-erythrocyte spleen-to-liver ratio was 2.4-to-1 at 24 hr. (2) A shift of radiocolloid ($^{99m}$Tc-sulfur colloid) to the spleen was noted so that the spleento-liver ratio was 1.5-to-1 (normal is 0.2-to-1 up to 0.5-to-1). (3) Splenomegaly was seen on the scan.

Splenectomy was planned. At operation it was impossible to remove her spleen because of a mass of tumor involving the splenic pedicle as well as the distal pancreas. Therefore the splenic artery was ligated in its proximal portion about 2 in. from its origin at the coeliac axis in an effort to control the hypersplenism.

Improvement of the blood values was rapid as shown by the figures in the box in the next column. The post-operative course was marked by fever and left upper quadrant tenderness, both of which gradually subsided, as did a moderate increase in the left pleural effusion. The first post-operative scan was obtained 3 days after the operation (Fig. 2). Subsequent scans revealed no further changes in splenic size.

DISCUSSION

Ligation of the splenic artery in patients with portal hypertension has been described (2,3). However, we have been unable to find recent reports in the English language. Occluding of the artery in cases of thrombocytopenic purpura was described by Berg and Rosenthal in 1941 (4). These authors also provided a review of the literature on ligation of the main arterial blood supply of the spleen and restated the observation that this leads to a rapid decrease in splenic size but no frank necrosis.

Spleen artery ligation could conceivably be of use in the following situations:

1. When the spleen cannot be removed because of tumor around the pedicle (as in the present case).
2. When adhesions or other disorders make splenic mobilization difficult.
3. When evidence shows that residual splenic tissue is necessary for prevention of abnormalities in circulating erythrocytes.

Received April 1, 1970; original accepted April 28, 1970.
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It is not known whether the amount of splenic tissue remaining after the atrophy produced by arterial ligation can carry out the functions normally attributed to the spleen. There is also uncertainty as to whether tumor tissues within the spleen are more or less susceptible than normal tissue to the effects of splenic artery ligation. Most of the reduction in splenic size following arterial ligation occurs rapidly (2,4), probably in hours. The scan obtained on the third post-operative day in this case showed a marked diminution in the size from the preligation views; this did not progress further during the next 2 weeks. Applying any of the formulas suggested for predicting the weight of the spleen (5,6), we can estimate that about half of the splenic mass was lost by the third post-operative day.

SUMMARY

A case is described in which splenectomy for Hodgkin's disease was found unfeasible because of tumor involvement of the pedicle. Ligation of the splenic artery produced scan-documented diminution in splenic size as well as a marked improvement in the “hypersplenic” blood picture and subsequent more normal distribution of 99mTc-sulfur colloid between liver and spleen.

ACKNOWLEDGMENTS

Supported by CA 06519 from the U.S. Public Health Service and by T-492 from the American Cancer Society.

REFERENCES