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SPLENIC RADIOCOLLOID UPTAKE IN THE PRESENCE OF CIRCULATING HOWELL-JOLLY BODIES

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Three cases are described where there were circulating Howell-Jolly bodies while the spleen still possessed the ability to accumulate radioactive colloid. Hence there is a disassociation of splenic functions, but whether this is a qualitative or quantitative effect is uncertain. Literature data pointing out other disassociations of splenic activities are mentioned. In the cases in this report there were severe hematologic stresses with an outpouring of reticulocytes. Thus a great number of cells were likely presented for clearance of Howell-Jolly bodies, and this load could have been excessive. Hence the designation "overload syndrome" may be appropriate.

Splenectomy is invariably followed by the appearance of Howell-Jolly bodies in some of the circulating erythrocytes. In a number of diseases with the spleen anatomically present, two functional defects can be demonstrated. These are the presence of Howell-Jolly bodies and the failure of the spleen to accumulate intravenously injected radioactive colloid. In other words, the spleen appears to be functionally absent but anatomically present. This situation was referred to as functional asplenia (*1*). The reverse situation has been less well documented. That is, does the presence of Howell-Jolly bodies invariably denote either absence of the spleen or its functional inability to take up radioactive colloid? The cases described here help to answer this question.

CASE REPORTS

The three cases are summarized in Table 1. All had been studied because of the finding of Howell-Jolly bodies on a smear of the peripheral blood. These individuals had at least one other finding in common—the presence of reticulocytosis (9.0, 27.0, 7.7%). In all three individuals there was hepatic and splenic uptake of intravenously injected ^{99m}Tc-sulfur colloid (rectilinear scans or scintiscans) and a normal distribution of radiocolloid between the two organs.

DISCUSSION

The cases reported here, detected by the presence of Howell-Jolly bodies, were under severe hematological stress. The causes were folate deficiency, probable fetal-maternal transfusion and methemoglobinemia. The individuals responded with marked reticulocytosis. Hence many red blood cells were being presented for clearance of intracellular inclusions.

The spleens in these patients were capable of accumulating ^{99m}Tc-sulfur colloid. The organs, however, were not clearing all Howell-Jolly bodies from the blood stream. The spleen might have been "overloaded" by the large number of new cells awaiting clearance. Other causes such as opsonin deficiency due to the processing of many cells can also be envisioned. Although the mechanism is still not determined, the designation of this as an "overload syndrome" appears reasonable.

Whether the disassociation of radiocolloid uptake from the clearance of Howell-Jolly bodies is a qualitative or quantitative phenomenon is unknown. It probably points out, however, that all splenic functions are not tightly coupled to one another. For example, Schwartz (*2*) has reported the case of a child with functional asplenia (Howell-Jolly bodies and inability to accumulate radiocolloid) whose spleen retained the splenic reservoir function for platelets.

Howell-Jolly bodies were reported in a prospective study as transiently occurring in 1 of 76 full-

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TABLE 1. SUMMARY OF THREE CASES WITH HOWELL-JOLLY BODIES

Case No	Sex	Age	Reticulocytes	Comments
70-1055	M	38 yr	9.0%	Hemoglobin of 6.1, with low blood folate levels. Known poor dietary history, alcoholism, and liver disease. Hemoglobin A_2 = 5.5%, possible thalassemia minor. Bone marrow megaloblastic.
71-1529	F	5 days	27.0%	Hemoglobin of 6.2, with jaundice, acidosis, and bizarre erythrocyte shapes. Probable fetal-maternal transfusion.
71-2109	M	11 yr	7.7%	Bullous disease of skin; had been on steroids. At another hospital had been given $AgNO_3$ soaks. Although the hemoglobin level was 11.7, there was 27% methemoglobinemia. The ^{51}Cr erythrocyte survival was shortened ($T_{1/2}$ = 15 days).

term infants and 4 of 82 premature neonates (*3*). We have documented that functional hyposplenia in cyanotic congenital heart disease can disappear in selected cases over a period of time (*4*), suggesting reversal of some type of block. The finding of Howell-Jolly bodies in polysplenia with congenital heart disease suggests that the multiple spleens are somehow not functioning properly. Whether there is associated loss of ability to accumulate radioactive colloid is uncertain.

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