Heinz Bodies in Extravasated Erythrocytes

In many cases of toxic anæmia refractile granules, generally known as Heinz bodies, are formed in the red blood cells. These inclusions may be identified by their intense basophilia when stained supravitally; after fixation with alcohol they lose this property and as a result are not usually seen in Romanowsky-stained blood films. In these anæmias there is an associated fragmentation and distortion of the red blood cells.

A similar type of fragmentation and distortion of the red cells is sometimes seen in hæmothorax fluids, and this led us to examine the red cells by supravital staining with methyl violet. By this means Heinz bodies were demonstrated in the majority of serous and cystic fluids, and sometimes in bloodstained cerebrospinal fluid as well.

The inclusions show similar features to those of Heinz bodies formed in the circulating blood. They may be seen as refractile particles in unstained wet preparations and rapidly assume a dark purple-black colour when stained supravitally with 0·5 per cent methyl violet in normal saline. They vary in size from the minutest of dots to structures 3μ in diameter, and irregularly shaped forms may be seen as well as more rounded inclusions. An affected red cell may contain a single inclusion or a number (Fig. 1).

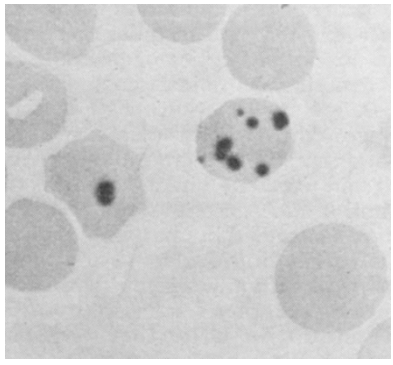

Fig. 1. Heinz bodies in erythrocytes in pleural fluid

The affected red cells may be otherwise normal in appearance, although often the inclusions are also found in distorted or spherocytic cells. In some specimens the red cells show a greater variety of appearances than red cells from the circulating blood in Heinz body anæmia.

Table 1 classifies 121 specimens from 100 patients, grading the extent of Heinz body formation in three categories.

In 15 cases more than one specimen was examined over a period of time. In six cases the proportion of cells containing Heinz bodies rose; for example, in a case of hæmothorax following mitral valvotomy there were 1·5 per cent 9 days after operation, less than 0·5 per cent at 24 days, 2 per cent at 28 days and 10 per cent 37 days following the operation. In one case an increase was later followed by a decrease; in seven cases no appreciable difference in the proportion of Heinz body containing cells was observed; and in two cases only a decrease was found.

Table 1

	Percentage of red cells containing Heinz bodies			
	>5·0	0·5–5·0	<0·5	Total
Pleural and peritoneal fluids	19	40	32	91
Cysts, hydrocœles, joints and bullæ	2	5	4	11
Hæmatomas	1	6	1	8
Cerebrospinal fluid	4	6	1	11
Total	26	57	38	121

We consider that the finding of red cells containing Heinz bodies in so high a proportion of fluids examined indicates that this is a normal step in the breakdown of red cells which have been shed into the body cavities. In old collections of blood the affected corpuscles are very numerous. For example, in a subdural hæmatoma of 3 weeks standing 70 per cent of the red cells were affected; in a pseudomucinous ovarian cyst 85 per cent, and in a dental cyst of the maxilla 100 per cent of the red cells contained Heinz bodies. In such cases as these the cells show complete loss of hæmoglobin and the inclusions become fixed to the distorted cell membrane. However, in serous cavities from which extravasated red cells are usually absorbed rapidly, such as the pleural and peritoneal spaces, cells containing Heinz bodies are often very scarce.

Although there are a number of reports[1–4] that similar inclusions are formed when red blood cells are incubated *in vitro* under sterile conditions, we have found only one case report in the literature of this century[5], in which Heinz bodies were noted in extravasated red cells *in vivo*. The phenomenon was, however, known to Virchow, and is described in the first volume of his *Archives*[6], but seems to have been since forgotten. Experiments by one of us (R. S. S.) are now in progress to follow the process of Heinz body formation in shed blood, and the results will be published later.

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Antibiotic Substances from Yeast

It was suggested[1] that the micro-organism-inhibiting properties of material from baker's yeast reported by us[2] might lie in a mixture of fatty acids. Although we had found that fatty acids from yeast could inhibit the respiratory metabolism of yeast and tissues[3] we believed that other types of substances might be involved.

The following preparative procedure was finally used. Twenty-five pounds of baker's yeast were extracted with 95 per cent ethanol under reflux for 5 hr. The extract was taken to dryness *in vacuo* and 100 ml. of water were added. After filtration, the aqueous filtrate was acidified to *p*H 2 with 0·1 *N* hydrochloric acid and extracted with ether. The