

## **SUBCUTANEOUS FAT NECROSIS IN CAPTIVE BLARINA SHREWS\***

Authors: COSGROVE, G. E., STORY, J. D., and DUNAWAY, P. B.

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## SUBCUTANEOUS FAT NECROSIS IN CAPTIVE BLARINA SHREWS\*

From 1964 to 1969, we examined, by means of necropsy and histopathological examinations, 20 *Blarina brevicauda*, the short-tailed shrew, trapped near Oak Ridge National Laboratory in East Tennessee. The short-tailed shrew is one of the species we are studying in a program of comparative mammalian radiobiology. Details of the methods of colony maintenance and of the experiments in which the shrews are used have been given (Dunaway et al., 1969. *In* Nelson and Evans, ed., Symposium on Radioecology, pp. 173-184). Of the 20 shrews examined, 12 were freshly trapped and 8 were lab held, 4 of these latter being postirradiation survivors. In common with Pucek (1964, *Acta Theriol.* 8: 137-166), we noted weight gain and marked increase in fat-body size in laboratory maintained shrews.

In 4 shrews there was marked enlargement and discoloration of the dorsal and abdominal subcutaneous fat bodies (Fig. 1). A male survived 158 days, after 688 rads of whole-body gamma irradiation.

This shrew had chronic ulcerative dermatitis with subcutaneous abscesses on the dorsum. A female survived 255 days, after 875 rads. She had larval *Porrocaecum* sp. nematodes in subcutaneous cysts. Another female survived 527 days, after 688 rads. She had chronic dermatitis of the dorsum with fungus in the superficial hyperkeratotic debris. The final shrew was an unirradiated male killed after 49 days in the colony. Postirradiation graying of hair was present in the three irradiated shrews (Fig. 2). Histologically the lesion was characterized by extensive fat necrosis with inflammatory cell exudate, giant cell formation, and formation of new connective tissue and blood vessels (Fig. 3, 4). No other pathologic findings were consistently found.

We have been unable to determine the cause of the fat necrosis. Since only one of the 4 had associated subcutaneous cysts of larval *Porrocaecum* (a common parasite of shrews [Schwartz, 1926, *Proc. U.S. Natl. Mus.* 67 (7): 1-8]), this does not seem to be the cause. We have not

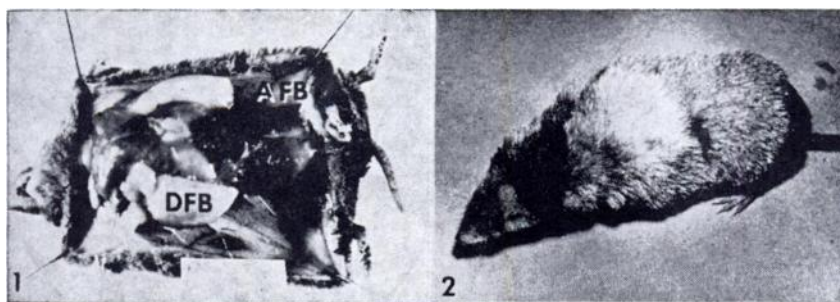


FIGURE 1. Ventral view of *Blarina* with skin reflected to show enlarged, discolored dorsal fat bodies (DFB) projecting laterally down the thorax, and abdominal fat bodies (AFB). Nonirradiated shrew, captive 49 days.

FIGURE 2. Postirradiation graying of fur in *Blarina*.

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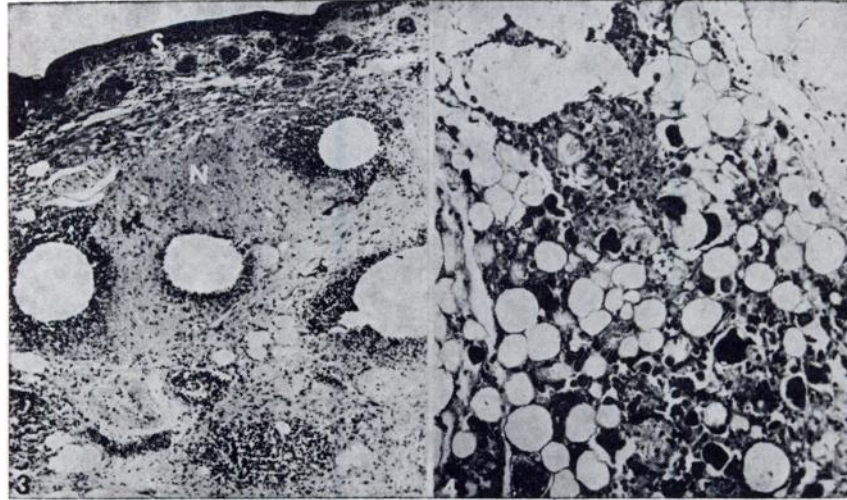


FIGURE 3. *Histological appearance of dorsal skin (S) and necrotic (N), inflamed subcutaneous tissue and fat from a shrew surviving 527 days after 688 rads. H & E, 120.*

FIGURE 4. *Another area of involved subcutaneous fat, showing necrosis of fat, leucocytic infiltrate, and "foreign-body" giant cells. H & E 120.*

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found fat necrosis in freshly caught *Blarina* which implies that some condition of colony life such as nutrition, lack of exercise, trauma, etc., is responsible.

We were unable to find another reference to this condition in shrews, but idiopathic subcutaneous fat necrosis occurs in many species of animals.

G. E. COSGROVE

J. D. STORY

P. B. DUNAWAY

*Biology Division*

*and*

*Ecological Sciences Division*

*Oak Ridge National Laboratory*

*Oak Ridge, Tennessee 37830*

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