

The Foci of the Red Bone Marrow Observed in the Laryngeal Cartilages of the *Suncus murinus*

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Summary: In the *Suncus murinus*, the thyroid, the cricoid and the arytenoid cartilages were in part ossified. The foci of the red bone marrow, termed as the “marrow foci”, were observed in the ossified portion of the cartilages. The marrow foci were filled with mature and immature blood cells. It is suggested that the marrow foci take part in active hematopoiesis in the *Suncus*. Further, a canal which connected the marrow cavity and the outside of the cartilage was occasionally seen. It seems that the canal corresponds to the nutrient canal.

In the male adult *Suncus* aged from 6 to 12 months, the body of the thyroid cartilage, the plate of the cricoid cartilage and the base and the vocal process of the arytenoid cartilage are in part ossified. The foci of the red bone marrow, termed as the “marrow foci” by Hogg (1982), are encountered in the ossified portion of the cartilages (Figs. 1 and 2). The location and number of the marrow foci are various from one *Suncus* to another. The marrow foci are divided into the vascular compartment comprising a system of sinusoidal capillaries, and the hematopoietic compartment which are filled with mature and immature blood cells (Fig. 3). No fat tissue is observed in the marrow foci. The marrow foci located in the cartilages has been little studied. Summerfield King (1963) reported in the thyroid, the cricoid, and the lower part of the arytenoid cartilages of man that the presence of marrow foci was noted in the early stages of ossification. However, it was published in

brief summary and no figures were shown. Hogg (1982) described in the cricoid and the tracheal cartilages of domestic fowl that the numerous marrow foci were present in advance of true ossification. Although Nokubi and Igarashi (1984) studied the laryngeal cartilages of the *Suncus*, they did not mention the presence of the marrow foci.

The function and significance of the marrow foci in the cartilages are obscure. Hogg (1982) suggested in birds where the skeleton became extensively pneumatized, with resultant replacement of much marrow tissue, that the marrow foci in the cartilages could play a significant role in hematopoiesis. In the *Suncus*, on the other hand, it is mentioned that even in the adult fat tissue is not found in the bone marrow and only small fat droplets appear in a few endothelial cells of the sinusoidal capillaries, and that hematopoiesis is actively performed both in the bone marrow and in the spleen under physiological condi-

tions (Fukuta, 1985). Further, Takenaka (1985) described that in the *Suncus* red blood cell number was much larger than in other species. It may be suggested that the marrow foci in the laryngeal cartilages considerably take part in active hematopoiesis in this animal. The present authors have to continue further studies on the function and development of the marrow foci.

In general, hyalin cartilage is avascular (Fujita and Fujita, 1981). In this study, however, a canal which contains the blood vessel and connects the marrow cavity with the outside of the cartilage is occasionally seen (Fig. 4). In a typical long bone, the nutrient artery and the central vein go in and out the bone marrow cavity through the nutrient canal. It seems that the canal observed in this study corresponds to the nutrient canal.

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PLATES

Explanation of Figures

Plate I

- Fig. 1. Frontal section through the vocal process. The marrow foci (arrows) are seen in the base of the arytenoid cartilage (Ab) and in the body of the thyroid cartilage (Tb). Av = vocal process of arytenoid cartilage. Cp = plate of cricoid cartilage. ETA = external thyroarytenoideus muscle. ITA = internal thyroarytenoideus muscle. L = laryngeal cavity. Tp = plate of thyroid cartilage. $\times 30$.
- Fig. 2. Frontal section through the cricoid cartilage. The marrow foci (arrows) are seen in the plate of the cricoid cartilage (Cp). Ab = base of arytenoid cartilage. Ca = arch of cricoid cartilage. DCA = dorsal cricoarytenoideus muscle. ES = esophagus. LT = laryngotracheal cavity. Tr = tracheal cartilage. $\times 30$.
- Fig. 3. Higher magnification of the marrow foci in the body of the thyroid cartilage. The marrow cavity is surrounded by the ossified portion of the cartilage, and is filled with numerous blood cells. $\times 300$.
- Fig. 4. a. Frontal section showing the plate of the cricoid cartilage. A canal (between arrows) which contains the blood vessel (arrowhead) is seen. $\times 150$.
b. Higher magnification of the canal (between arrows). The blood vessel (arrowheads) which connects the marrow cavity and the outside of the cartilage is seen. $\times 600$.

