

RESORPTION OF ANTLER BONE FROM A SUBCUTANEOUS SITE.

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In most species of deer, males carry hard antlers. These are essentially dead bones (1) attached to the frontal bones of the skull for periods of time which may exceed six months. It is not known how these structures avoid rejection during this period or how the mechanism of casting is regulated, although it is presumed that casting involves resorption of antler bone at its site of attachment to the skull. The present study examined resorption of pieces of antler and femur bone implanted subcutaneously in the neck of red deer stags during autumn and in winter.

Eight adult stags had five pieces of bone (10 x 8 x 2 mm) placed subcutaneously in the neck. Local anaesthesia was used throughout this operation. Each stag received one piece of cortical femoral bone (from another stag) and four pieces of cortical bone from cast antlers. In four stags, one of the pieces of antler bone was an autograft ('own' antler) otherwise antler pieces were allografts ('other' antler). Bone implants were left in place for six weeks in April-May and the whole procedure was repeated in June-July. Resorption was measured as weight loss of implants and serum testosterone levels were determined twice within each period.

In the first period (high serum testosterone levels) mean resorption (\pm s.e.m.) was 10.1 \pm 9.49 %, 17.1 \pm 3.94 % and 3.0 \pm 1.04 % for 'own' antler, 'other' antler and femur, respectively. Corresponding values for the second period (low serum testosterone levels) were 39.9 \pm 8.92 %, 32.1 \pm 4.84 % and 1.8 \pm 0.98 %. In the case of 'own' antler, differences in resorption between the two periods was highly significant ($P < 0.001$).

These results demonstrate that antler bone is resorbed from a subcutaneous site and that there are seasonal differences in the resorptive activity at this site. In conclusion it is suggested that the site of attachment of antlers to the skull is protected from resorption or that hard antler tissue at the point of attachment remains alive and thus is not rejected until casting is initiated.

1. Goss, R.J. (1963) In Mechanisms of hard tissue destruction, ed., Sognaes, R.F. Ch. 13, pp 339-369. Washington: American Association for the Advancement of Science.

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