Diagnosis and management of a granulosa-theca cell tumor in a nulliparous Holstein heifer

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Although rare, granulosa-theca cell tumors (GTCT) are the most commonly reported ovarian neoplasm in the bovine. Historically, diagnosis has centered on transrectal ultrasound, histopathology, and serum hormone assays. Appearance of these tumors is variable and may be difficult to distinguish from ovarian abscesses or cysts. In the field, biopsy of the affected ovary to confirm a diagnosis may be difficult or impractical. Recently, plasma anti-Müllerian hormone (AMH) has been identified as a potentially reliable diagnostic aid in confirmation of GTCT.

In December 2012, routine transrectal reproductive ultrasound examination of a 15-month old Holstein heifer housed at the Michigan State University Dairy showed a grossly enlarged right ovary with irregular architecture and multiple cystic structures. The contralateral ovary was inactive. The AMH concentration from a pre-surgical serum sample in this case was 5.37 ng/mL. Previously published data show that normally cycling cows have a mean AMH concentration of 0.09 ng/mL and an optimal cutoff of 0.36 ng/mL for diagnosis of GTCT has been suggested. The inhibin level was 1.53 ng/mL (published data suggests a cutoff of 0.69 ng/mL for GTCT).

In January 2013, the affected ovary was removed via a standing right flank laparotomy. A 12 cm diameter ovarian mass was exteriorized and multiple transfixation ligatures were placed on the pedicle prior to transection. Histopathologic and immunohistochemical examination of the mass confirmed the diagnosis of granulosa theca cell tumor.

Following removal of the affected ovary, the heifer began cycling normally. The heifer was artificially inseminated in March 2013 and calved in December 2013. Based on the outcome of this case, we conclude that AMH and inhibin levels may be useful to practitioners as an aid in the diagnosis of GTCT. Additionally, although this surgery was performed in a teaching hospital, it could easily be performed in the field and may preserve the reproductive life of a genetically valuable animal.

**Keywords:** Anti-Müllerian hormone, bovine, ovarian tumor