Elastosonographic appearance of 51 canine superficial lymph-nodes: Comparison with conventional B-mode sonography

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Introduction/Purpose: The conventional sonographic B-mode differ- entiation between neoplastic and nonneoplastic lymphadenopathy in canine patients can be sometimes challenging as their appearance can overlap. Even though histopathology represents the diagnostic gold standard; real-time elastosonography in people have shown to be useful in improving the diagnostic accuracy. The present retrospec- tive study aims to describe the diagnostic accuracy of real-time elas- tosonography (ELX) in the evaluation of diseased canine lymph-nodes alone and in association with the conventional B-mode ultrasound (BMU).

Methods: Fifty-one lymph-nodes (six prescapular lymph-nodes, 22 inguinal lymph-nodes, 23 popliteal lymph- nodes) belonging to 43 dogs were examined by both BMU and ELX with a 7.5–13 MHz linear probe. BMU evaluation was based on the sum of scores for following crite- ria: Short/Long axes ratio, margins, hylum, and echotexture (score 1 for normality and 2 for abnormality). ELX patterns (P) were deter- mined on the distribution and percentage of hard areas into lymph- nodes (P1: absence of very small hard areas; P2: small scattered hard areas <45% of total area; P3: large hard areas >45% of total area; P4: peripheral hard ring and central soft core; P5: hard areas occupying the entire lymph-node). The ELX score was: 2 for P1; 4 for P2; 6 for P3, 8 for P4, and 10 for P5. For each lymph-node a BMU, ELX, and BMU+ELX scores were obtained. Cut-off values for neoplastic diag- nosis were obtained basing on Area under Receiver Operator Charac- teristic Curve (Score >6 for BMU; >4 for ELX and >10 for BMU+ELX). Differences between BMU, ELX, and BMU+ELX scores were evaluated with the Mann–Whitney test. The Odds Ratio (OR), Sensibility (Se), and Specificity (Sp) were also obtained.

Results: Twenty-five lymph-nodes were histologically diagnosed as neoplastic while 26 as non-neoplastic. No differences were observed between neoplastic and non-neoplastic lymph-nodes considering BMU score alone (p>0.05). ELX score was <4 in 9 neoplastic and 21 non-neoplastic lymph-nodes; while it was >4 in 16 neoplastic and 5 non-neoplastic lymph-nodes. BMU+ELX score was <10 in 2 neoplas- tic and 14 non-neoplastic lymph-nodes; while it was >10 in 23 neo- plastic and 12 non-neoplastic lymph-nodes. Statistical significant dif- ferences between neoplastic and non-neoplastic lymph-nodes were observed considering ELX score alone and the combined BMU+ELX score (p<0.05). Se, Sp and OR for ELX score were respectively: 64%; 81%; 7.5. Se, Sp and OR for BMU+ELX score were respectively: 92%; 54%; 13.4.

Discussion/Conclusion: In our study ELX evaluation alone and asso- ciated with BMU had the potential to differentiate neoplastic versus nonneoplastic lymphadenopathy in dogs. These promising results can help clinicians to obtain a more accurate ultrasonographic diagnosis prior to cytologic or histopathologic evaluation.