

3. Summary

Purpose:

To evaluate the clinical utility of contrast enhanced ultrasonography (CEUS) for the characterisation of focal liver lesions with the emphasis on the benign entities. Our aim was to find out the accuracy of CEUS to differentiate between the malignant and benign lesions and to extend the knowledge about the typical signs of solid benignomas on CEUS.

Material and methods:

our material consists of 163 liver masses observed in 144 patients. The final diagnosis has been stated by means of the computed tomography in 26.4 %, magnetic resonance imaging (60.4 %) and histology (25.8 %). There was a majority of women (n=90) against men (n=54); the average age was 47.6 years. The number of benign lesions (n=137) markedly exceeded the number of malignant ones (n=6). The dominant lesions were hemangiomas (n=66), the second most common was focal nodular hyperplasia (FNH, n=42). The other lesions comprised of limited numbers of entities (focal steatotic or nonsteatotic regions: n=21, metastatic lesions: n=15, hepatocellular carcinoma, n=7, regenerative nodular hyperplasia, n=5, peripheral cholangiocarcinoma, n=4, and others – inflammatory pseudotumour, adenoma, epithelial angiomyolipoma).

Results:

The accuracy of CEUS for the differentiation of malignant or benign lesion was 95.7 %. Regarding the statement of the diagnosis of malignant lesion, sensitivity of the method was 96.2 %, specificity 95.6 %, positive predictive value was 80.6 % and negative predictive value was 99.2 %. The incorrect diagnosis on CEUS has been stated in 18 (11 %) lesions; 15 of them were benign and 3 malignant. In the group of 66 hemangiomas, 58 (87.9 %) have been correctly characterised. Among the 8 cases of incorrect final diagnosis, the 6 lesions have been correctly assigned as benign and only 2 were reported as malignant. Overall, 97 % of hemangiomas have been reported as benignomas. FNH was correctly diagnosed in 92.7 % (n=39). Among the 3 erroneously characterised lesions, only 1 was reported as malignant. All these three lesions were of 20 mm or less in size. The overall accuracy for the diagnosis of FNH as a benign lesion was 97.6 %.

Conclusion:

Based on our results and currently available published data, the accuracy of CEUS for the differentiation of benign and malignant lesions exceeds the accuracy of non-contrast enhanced ultrasonography and can be well compared with CT and MR. Furthermore, typical features of blood-pool contrast agent and dynamic recording of enhancement bring some specific signs for better differentiation between the most common benign and malignant lesions.