THE ROLE OF BI-RADS 4 SUBCATEGORIES IN PREDICTING MALIGNANCY: A SYSTEMATIC REVIEW AND META-ANALYSIS

Mary Rose Calindas-Mendoza, MD, Rommel M. Galicia, MD, MHA, FPCS, FPSGS, FACS
Bicol Medical Center | Universidad de Sta Isabela - Health Services Department, Naga City, Camarines Sur, Philippines

BACKGROUND

Bi-RADS® 4 encompasses a wide range of likelihood of malignancy with tissue diagnosis as concordant management recommendation. This study aims to determine the malignancy rate and diagnostic value of BI-RADS 4 subcategories in predicting malignancy.

METHODS

Literature search of relevant studies from 2003 to 2019 was conducted. Eligible studies included those reporting malignancy rate of BI-RADS 4 confirmed through histopathology. QUADAS-2 was used to appraise risk of bias. Meta-analysis was performed using Review Manager 5.3 and Stata MP 14. Sub-analyses of malignancy rates were performed.

RESULTS

Forty-three studies were included yielding 109882 patients. The malignancy rate of BI-RADS 4A, 4B and 4C is 8%, 36%, and 73% respectively. Malignancy rate of all subcategories showed a wide variation depending on study design, imaging modality and biopsy technique.

Table 1. Summary of Overall Malignancy Rate of BI-RADS 4 Subcategories

<table>
<thead>
<tr>
<th>BI-RADS 4 SUBCATEGORY</th>
<th>OVERALL MALIGNANCY RATE (95% CI)</th>
<th>Likelihood of Malignancy set by American College of Radiology</th>
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</thead>
<tbody>
<tr>
<td>4A</td>
<td>8% (6-9%)</td>
<td>&gt;2 to &lt;10</td>
</tr>
<tr>
<td>4B</td>
<td>36% (32-40%)</td>
<td>&gt;10 to &lt;50</td>
</tr>
<tr>
<td>4C</td>
<td>73% (67-78%)</td>
<td>&gt;50 to &lt;95</td>
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Bi-RADS 4A had a high sensitivity (99.15%) but low specificity (27.35%) in detecting malignancy. 14.15.19.20.25.26.29.33.36.44.49.51.54

CONCLUSION

The malignancy rate of BI-RADS 4 subcategories are within the limits set by the American College of Radiology, except when all three imaging modalities were utilized (BI-RADS 4A & 4B). Using BI-RADS 4B as a cutoff for malignancy, unnecessary biopsies can be reduced while minimizing missed out malignancies. Furthermore, additional imaging in subsets of patients with BI-RADS 4A can improve cancer detection rate.

REFERENCES

[Provide references here]