Efficacy of Anti-Mullerian Hormone in the Diagnosis of Polycystic Ovarian Syndrome

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ABSTRACT

Polycystic ovarian syndrome (PCOS) is a complex condition that presents with a wide variety of symptoms. The PCOS diagnosis standard is the Rotterdam criteria, which includes hyperandrogenism, oligo-anovulation, and polycystic ovarian morphology (PCOM). Transvaginal ultrasounds have traditionally been used to evaluate PCOM, however, they are highly dependent on technician skill. This paper will evaluate research regarding the use of anti-Mullerian hormone (AMH) in PCOS diagnosis as an alternative to transvaginal ultrasound.

INTRODUCTION

• Prevalence of PCOS estimated between 5–15% of all women
  – Still frequently overlooked and often goes undiagnosed
• Clinical presentation can vary significantly
• Essentially a diagnosis of exclusion
• Many women visit multiple healthcare providers across numerous specialties over several years before receiving an accurate diagnosis
• Delay in diagnosis can impact the overall quality of life and the ability to effectively manage PCOS
• Notable dissatisfaction with the diagnostic process

METHODS

• Literature search in January 2020
• PubMed and Academic Search Ultimate
• Search terms: “polycystic ovarian syndrome” & “anti-Mullerian Hormone” & “transvaginal ultrasound”
• 8 articles selected based on relevance and analyzed for structure and results

RESULTS

• Majority were cross-sectional studies
  – Evaluated multiple exposures and outcomes
  – Generate topics for further research
    ▪ Ethnicity, age, PCOS pathophysiology and severity
• Significant positive relationship between AMH and PCOS
• Suggests AMH would be an effective method for evaluating PCOM and assist in the diagnosis of PCOS
• An assessment of study methodology revealed notable limitations
  – Small sample sizes
  – Ranged between 54 to 997 participants
  – Difficulty establishing standard testing protocols
  – Differing AMH threshold values and serum collection timelines
• 5 studies evaluated the role of other hormones in PCOS
  – LH, FSH, estradiol, and testosterone
  – 4 of the 5 studies found some correlation with AMH
  – A consensus on these hormones was difficult to achieve due to these limitations

Comparison of Diagnostic Parameters

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<tr>
<th>STUDY</th>
<th>Serum AMH</th>
<th>PCOM</th>
<th>Serum Total Testosterone</th>
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<tbody>
<tr>
<td>Ahmed et al (2019)</td>
<td>S</td>
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<td>Lie Fong et al (2017)</td>
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<td>Matsuizaki et al (2017)</td>
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<td>Nylander et al (2017)</td>
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<td>Rijal (2019)</td>
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<td>Safier et al (2016)</td>
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S = significant; NS = not significant

REFERENCES


DIFFUSION

• All of the studies reported significant correlations between AMH and PCOS diagnoses
• Limited sample sizes, recruitment bias, and testing protocol discrepancies reduced the external validity of results
• Consistent use of the Rotterdam criteria improved the comparability among studies
• New studies should include larger samples with defined study protocols to improve data collection and provide more compelling results
  – Enhanced generalizability of findings
  – Establish correlations with other PCOS characteristics (other hormonal values)

CONCLUSION

• AMH appears to be a valuable tool for creating an effective diagnostic process
• Study results indicate a significant relationship between AMH and PCOS
• More research using larger, diverse samples and detailed testing protocols are still needed to determine clinical lab values for AMH
• These studies provide an important foundation for future research into the topic of PCOS diagnosis
• With a timely and accurate diagnosis, women with PCOS would be more likely to receive appropriate medical screenings and counseling on disease management