Both MRI and Ultrasound are non-invasive imaging techniques that can be used to diagnose Müllerian duct anomalies (MDAs). The development of the normal female reproductive tract requires differentiation and development of the Müllerian ducts. These ducts develop caudally from embryonal mesoderm forming the fallopian tubes and fuse distally to create the uterus, cervix, and upper vagina.

The Müllerian duct anomalies (MDAs) can be divided into two major categories:

1. Obstetric
2. Non-obstetric

Pathophysiology

- Both paramesonephric and mesonephric ducts can fail to fuse or fuse incompletely, leading to a variety of malformations.
- The failure of the urogenital sinus and the müllerian ducts to fuse results in a range of defects, from complete absence to partial fusion.

Introduction

- The development of the normal female reproductive tract requires differentiation and development of the Müllerian ducts.
- The paramesonephric and mesonephric ducts develop caudally from embryonal mesoderm forming the fallopian tubes and fuse distally to create the uterus, cervix, and upper vagina.

Background

- Both MRI and Ultrasound are non-invasive procedures for assessment of Müllerian Duct Anomalies (MDAs).
- Previous studies in adults have shown that these imaging modalities are accurate tools for diagnosing MDAs. Therefore, they are preferable as investigative tools compared with diagnostic laparoscopy.
- To our knowledge, no previous investigation has been conducted in this field in children.
- Given differences in the anatomy of the growing uterus and ovaries in children as compared to adults, the diagnostic performance of MRI and Ultrasound in MDAs in the childhood should be further evaluated.

Objective

- The objective of this study is to evaluate the diagnostic performance of MRI and Ultrasound in children diagnosed with surgically confirmed complicated MDAs.

Patients and Methods

- MRI and/or Ultrasound imaging data from 20 girls presenting with MDAs were collected from PACIS (Physician-Activity-Centric Imaging System) and analyzed.
- The MRI and Ultrasound imaging data were reviewed by two radiologists.
- The imaging data were correlated with the surgical findings.
- The surgical findings were considered as reference standard measures.
- The MRI and Ultrasound imaging data were compared with the surgical findings.
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Results

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Conclusion

- Ultrasound examination accurately diagnoses an abnormal genital tract; although, it is not able to identify the MDA type.
- MRI was a sensitive imaging tool for assessment of MDAs in this small sample of patients (adequate sensitivity cutoff: > 70%).
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Table 1. Classification of müllerian duct anomalies according to the American Society for Reproductive Medicine (ASRM) Classification System.

<table>
<thead>
<tr>
<th>Class</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Atresia</td>
<td>Complete absence of Müllerian ducts</td>
</tr>
<tr>
<td>B</td>
<td>Stenosis/Obstruction</td>
<td>Partial obstruction of Müllerian ducts</td>
</tr>
<tr>
<td>C</td>
<td>Partially Developed</td>
<td>Müllerian ducts are present but not functional</td>
</tr>
<tr>
<td>D</td>
<td>Hyperplasia</td>
<td>Müllerian ducts are overdeveloped</td>
</tr>
<tr>
<td>E</td>
<td>Non-functional müllerian structures</td>
<td>Müllerian ducts are present but not functional</td>
</tr>
</tbody>
</table>

Table 2. Classification of vaginal anomalies according to the American Society for Reproductive Medicine (ASRM) Classification System.

<table>
<thead>
<tr>
<th>Class</th>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Atresia</td>
<td>Complete absence of vaginal ducts</td>
</tr>
<tr>
<td>B</td>
<td>Stenosis/Obstruction</td>
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</tr>
<tr>
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References