



THE ROLE OF ARTIFICIAL INTELLIGENCE IN DIAGNOSING AND TREATING INTERSTITIAL CYSTITIS / BLADDER PAIN SYNDROME

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ABSTRACT 726

BACKGROUND



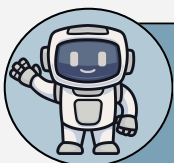
IC/BPS IS OF UNKNOWN ORIGIN



CHRONIC CONDITION



DEBILITATING DISEASE; NO
VALIDATED TX OR DX



AI EMERGED AS A PROMISING
TOOL

A

EVALUATE
AI
METHODS

I

NOTE STUDY
LIMITATIONS

M

EXPLAIN
CLINICAL
UTILITY

METHODS

- (2003-2024); n=25 studies
- **Samples:** Urine, Stool, Tissue, Imaging, Questionnaires
- **Models:** Logistic regression, SVM, CNN, ML
- **Evaluation:** Accuracy, AUC, Sensitivity/Specificity
- **Data Sources:** PubMed, ScienceDirect, Scopus

RESULTS

URINE N=4,397

Findings:

- Detect molecular changes (IL-6, IL-8, MCP-1, GRO)

Accuracy/Impact:

- ML models: 87-96% accuracy
- non invasive alternative.



BLOOD N=259

Findings:

- Molecular changes common between IC and MDD(ABCD2, ATP8B4, TNNT1)

Impact:

- Support dual screening
- Targeted therapy



STOOL N=34

Findings:

- Microbiome shifts
- 5 gut bacteria reduced in IC

Impact:

- Gut microbiome serve as new biomarkers
- Targeted therapy



SYMPTOM N=317

Findings:

- Surveys (ICSI/ICPI) classified subtypes (Bladder specific, myofascial, non-urologic pelvic pain).

Impact:

- Targeted therapy



SAMPLES/IMAGES
N ≈ 906

Findings:

- Gene expression changes in IC (KRT20, BATF..)
- Differentiated Hunner IC vs. Non-Hunner IC

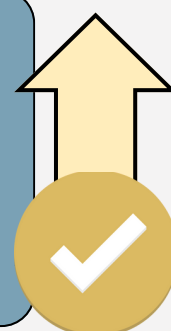
Accuracy/Impact:

- Outperformed expert urologists
- High Diagnostic accuracy
- Targeted therapy

INTERPERTATION OF RESULTS

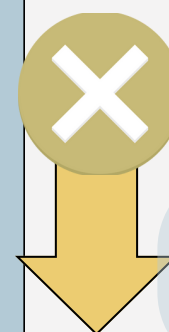
AI BENEFITS

- NON-INVASIVE DIAGNOSIS
- EARLY DETECTION
- TARGETED THERAPIES

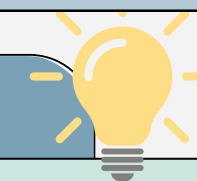


LIMITATIONS

- SMALL DATASETS
- LIMITED DIVERSITY
- LACK OF VALIDATION
- OVERLOOKED CO-MORBIDITIES
- LACK OF EXPLAINABILITY



CONCLUSION



- **STOOL/URINE:** NON-INVASIVE TOOLS USEFUL IN INTEGRATIVE MEDICINE
- **TISSUE:** INVASIVE BUT USEFUL IN SPECIALIZED CLINICS FOR COMPLEX CASES
- **BLOOD:** USEFUL IN MULTIDISCIPLINARY CLINICS FOR BPS AND CO-MORBIDITIES
- **SYMPTOM-AI:** USEFUL IN EARLY SCREENING IN PRIMARY CARE
- **NEED LARGER DATASETS**

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