TLR-4 EXPRESSION ACROSS EQUINE ENDOMETRIAL CATEGORIES DURING THE FOLLICULAR PHASE OF ESTROUS CYCLE

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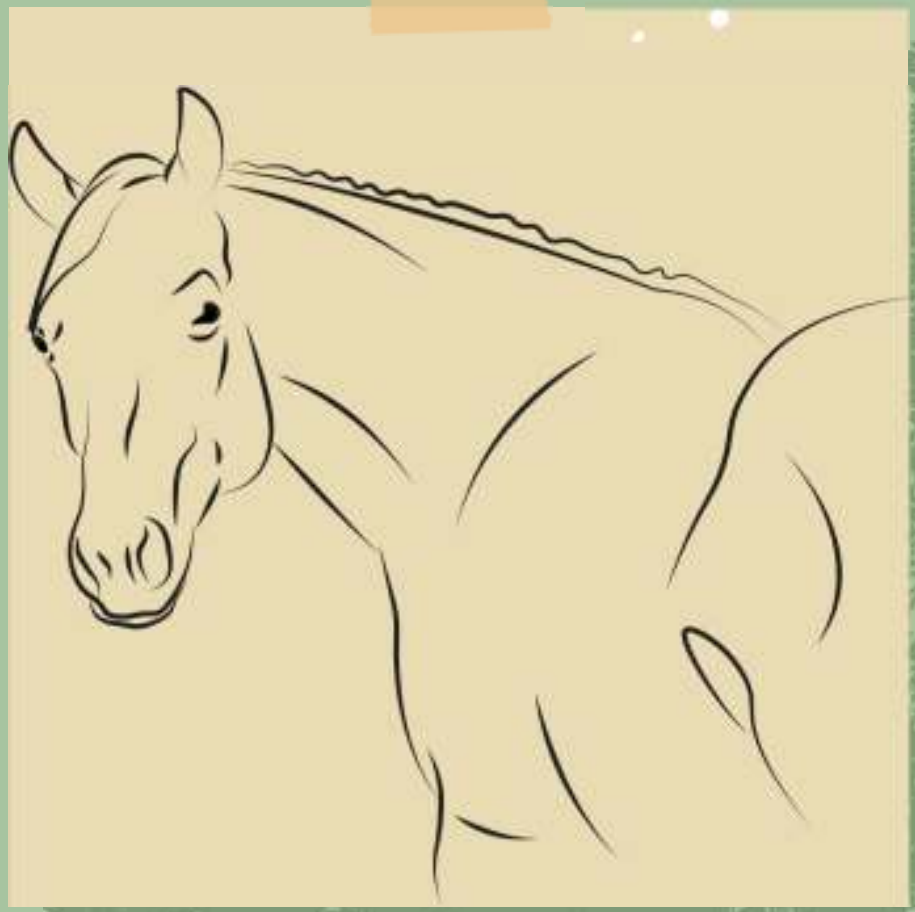

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ENDOMETROSIS

- Equine endometrial fibrosis;
- Collagen deposition in the ECM affects the endometrial glands;
- Results in dilated glands and gland nests;
- Significant economic losses due to reduced fertility;
- Endometrial classification (Keney & Doig, 1986): I (A, normal); IIA (B, mild); IIB (C, moderate); III (D, severe)

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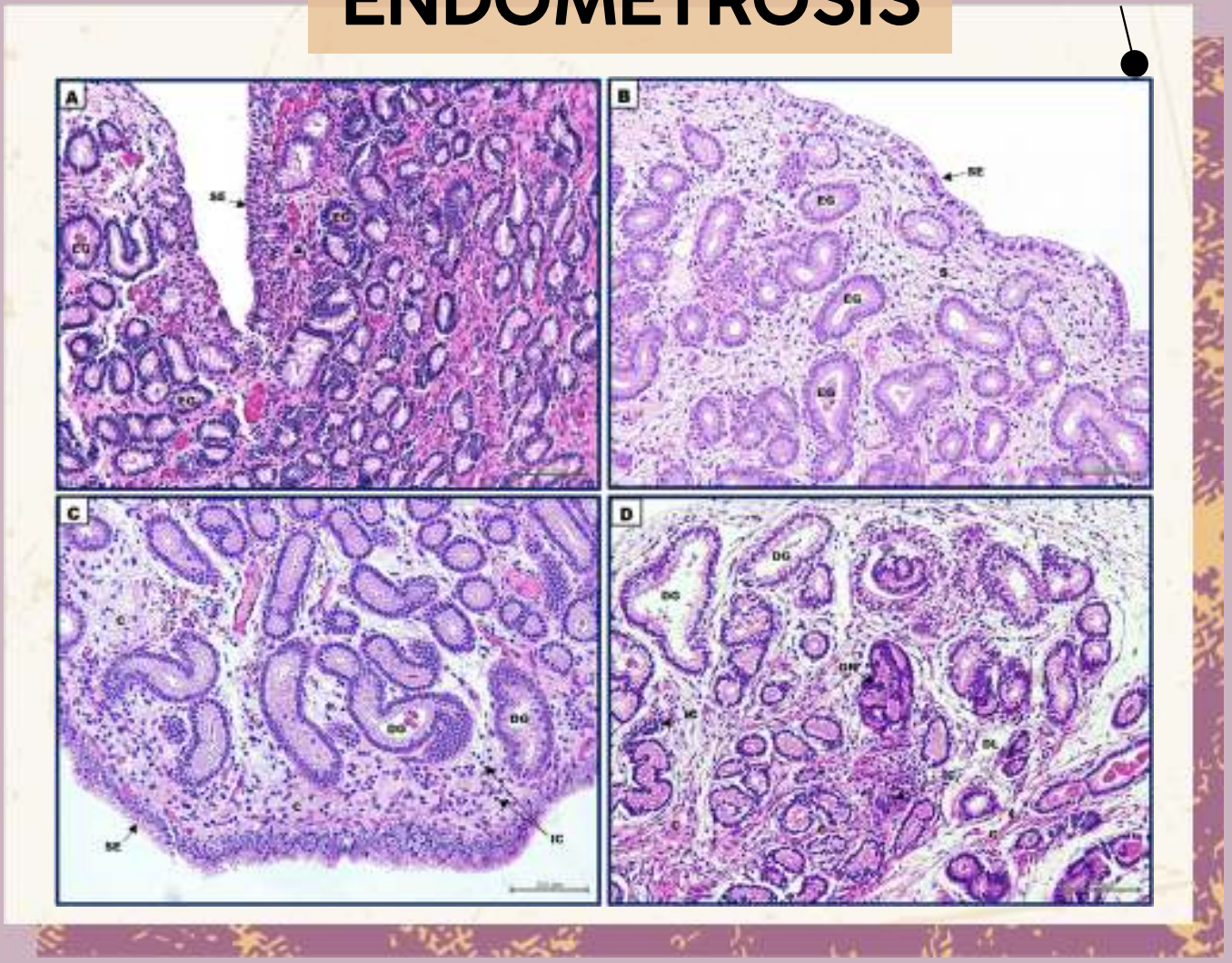
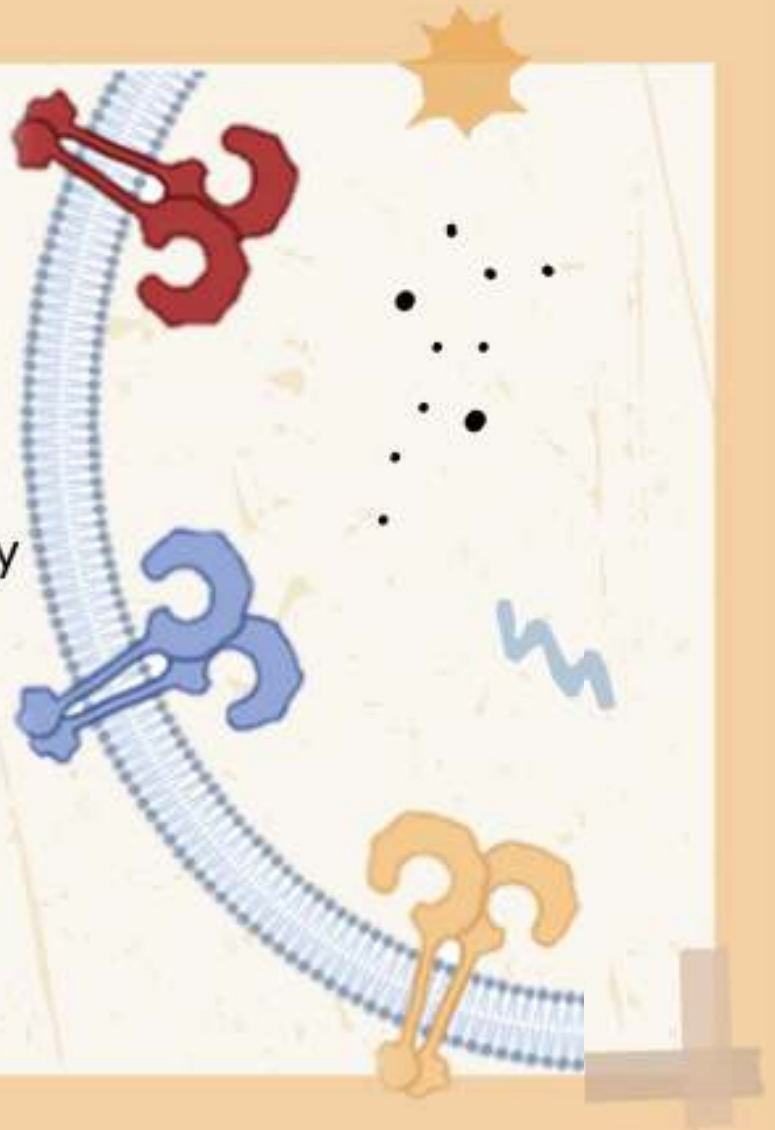


TLRs

- TLRs are transmembrane receptors;
- Involved in innate imune response;
- Involved in pathological processes, as inflamatory disorders / fibrosis / cancer;
- Can drive fibrosis differently depending on the organ and microenviorment;
- Previously linked to equine endometritis.



TLRs

- TLR-4 is present in the equine endometrium in different types of cells;
- TLR-4 transcription was upregulated in mares with subacute suppurative endometritis;
- Endometritis is a commun finding in mares after breeding,
- Chronic and persistent inflamation is know to contribute to endometrosis progression.

THIS STUDY AIMED TO...

characterize the endometrial expression pattern of TLR-4 during the follicular phase of the estrous cycle across the categories outlined in the Kenney and Doig classification system.

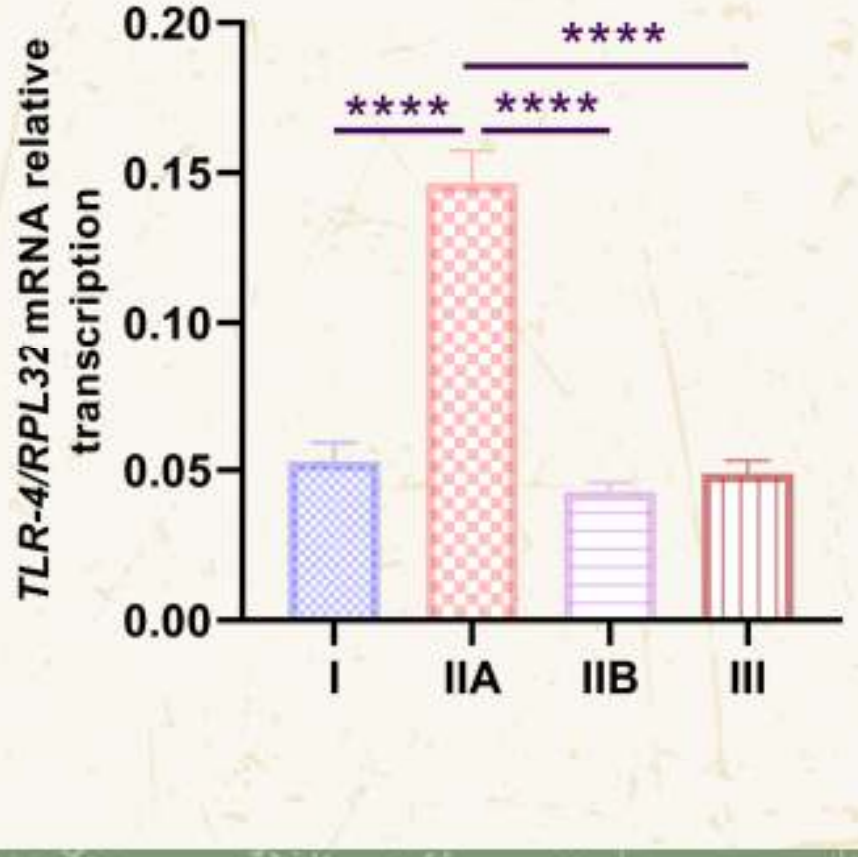
MATERIALS & METHODS

Sample collection	Endometrial Classification	Sample processing	Analytical Determinations
Post-mortem collection of uteri from healthy mares in FP (n=40) 	Cat. I (n =10) Cat. IIA (n=10) Cat. IIB (n=10) Cat. III (n=10) (Kenney & Doig, 1986) 	RNA and Protein Isolation 	**qPCR and WB (TLR-4)** 

RESULTS

TLR-4 mRNA expression was notably higher in category IIA endometria than in other endometrial categories (p<O.OOO1).

qPCR

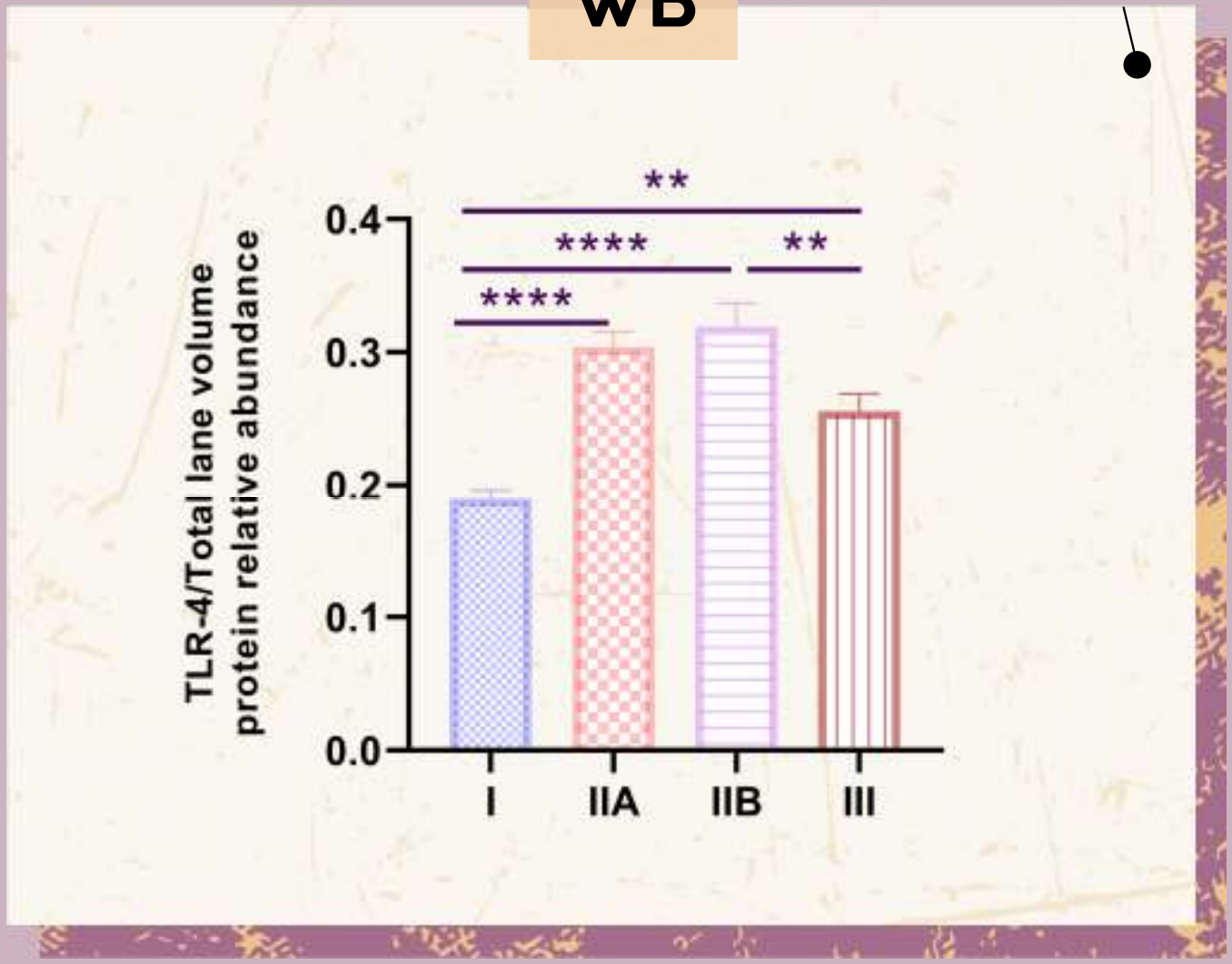


RESULTS

The TLR-4 protein abundance was decreased in category I compared to other endometrial categories (IIA, IIB: p<O.OOO1; III: p<O.O1).

Additionally, TLR-4 was up-regulated in category IIB compared to category III endometria (p<O.O1).

WB



DISCUTION

- Chronic inflammation drives endometrosis progression, promoting tissue remodeling and fibrosis;
- TLR-4, a key inflammatory receptor, is upregulated in mares with endometritis;
- We observed that TLR-4 mRNA is upregulated in category IIA endometria, linked to early inflammation;
- Normal endometria showed lower TLR-4 protein levels than other endometrial categories;
- Higher TLR-4 expression in category IIB vs. III suggests a role in early fibrosis;
- As fibrosis progresses, TLR-4 expression declines, indicating a shift in inflammation.

CONCLUSION

Overall, our findings suggest that TLR-4 is a key player in the inflammatory response associated with endometrial lesions.

Potential as a diagnostic biomarker or therapeutic target ?

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