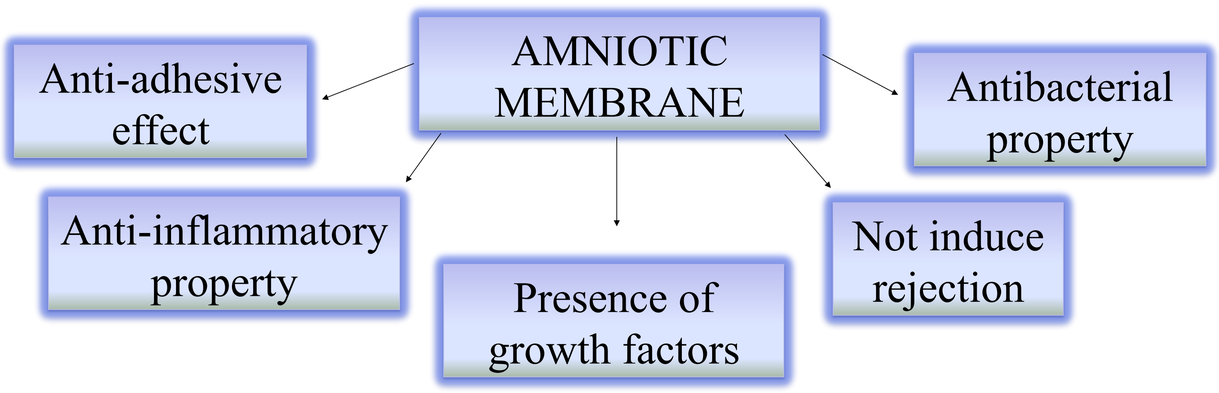
HUMAN AMNIOTIC MEMBRANE: AN OPTION TO THE TREATMENT OF ACHILLES TENDON INDUCED TENDINOPATHY

Nicodemo MC[1], Neves LR[2], Aguiar JC[3], Brito FS[4], Ferreira I[5], Sant'Anna LB[6], Raniero LJ[7], Barja PR[8], Arisawa EAL[9]

Universidade do Vale do Paraíba (UNIVAP), IP&D, Av. Shishima Hifumi, 2911, Urbanova CEP 12244-000, São José dos Campos – SP, e-mail: [1]marianacnicodemo@gmail.com, [2]lilidot@gmail.com, [3]josafa_aguiar@hotmail.com, [4]flaviane_britos@hotmail.com, [5]iferreira@univap.br, [6]lucianabsa@gmail.com, [7]lraniero@univap.br, [8]barja@univap.br, [9]mirela@univap.br

Keywords: Tendinopathy, Achilles Tendon, Amnion, Inflammation, Collagen

The Achilles tendon is commonly affected by many pathological and/or traumatic problems. Studies have shown many treatment options for tendinopathy, however none of these treatments is complete effective. In this context the amniotic membrane (AM), gained importance because of its properties.



PURPOSE OF THE STUDY

This study aimed to evaluate the biocompatibility and the action of human amniotic membrane in the treatment of induced tendinopathy in rats.

METHODS

Thirty-six rats were divided into 3 groups: Control (C), rats submitted to surgical procedures without tendon lesion and with the simulation of AM application; Injured (I), animals submitted to surgical procedures, including tendon injury and simulation of AM application; Treated (T), specimens submitted to the surgical procedures, including tendon injury and application of AM. These groups were subdivided in two experimental times (3 and 7 days).

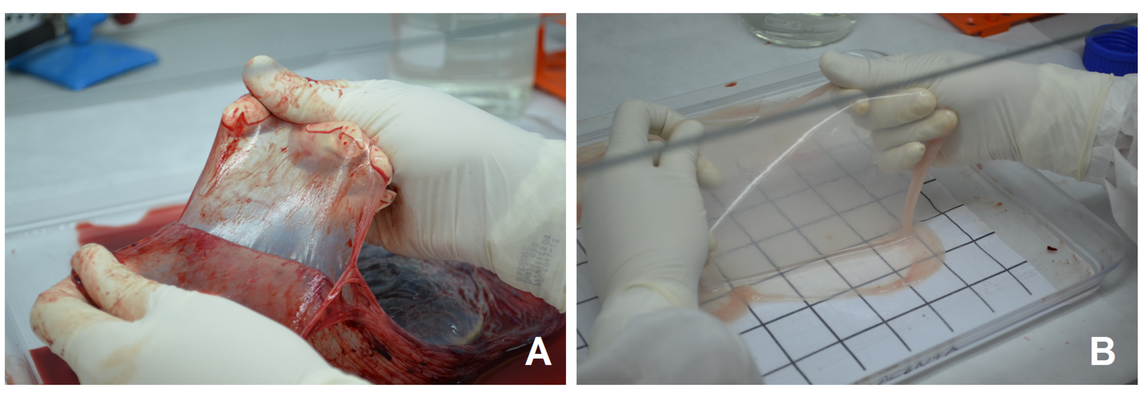


Fig. 1- (A) Procedures for manual separation of AM; (B) AM after processing.

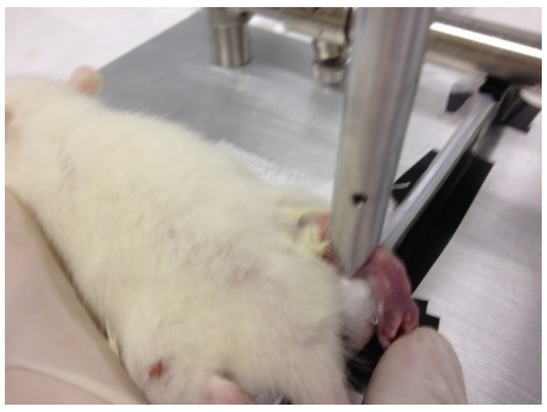


Fig. 2- Tendon injury. Right foot positioned in dorsiflexion to induce injury.

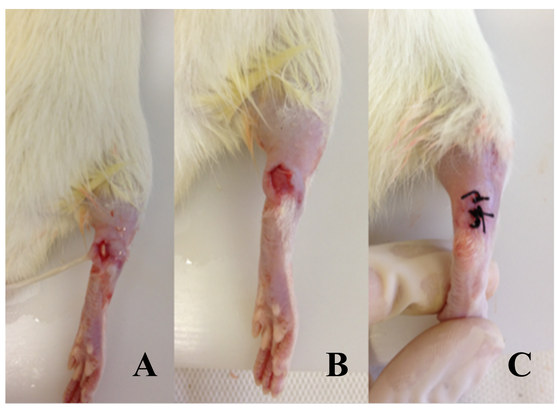


Fig. 3- Surgical procedure. (A) Application of AM fragment around the injured tendon; (B) the extremities of the membrane are connected with a drop of methacrylate; (C) suture of the skin tissue.

The samples were submitted to histological and histomorphometrical analyses. ANOVA and Tukey tests were applied to analyze the results.

RESULTS AND DISCUSSION

Histological and histomorphometrical analysis showed that the inflammatory response was very similar in groups I and T. The number of inflammatory cells was higher than that observed in group C, with statistical significance ($p<0.01$). At the specimens of group T it was possible to observe the fusion between injured tissue and the AM applied to the lesion area, especially at 7 days experimental time.

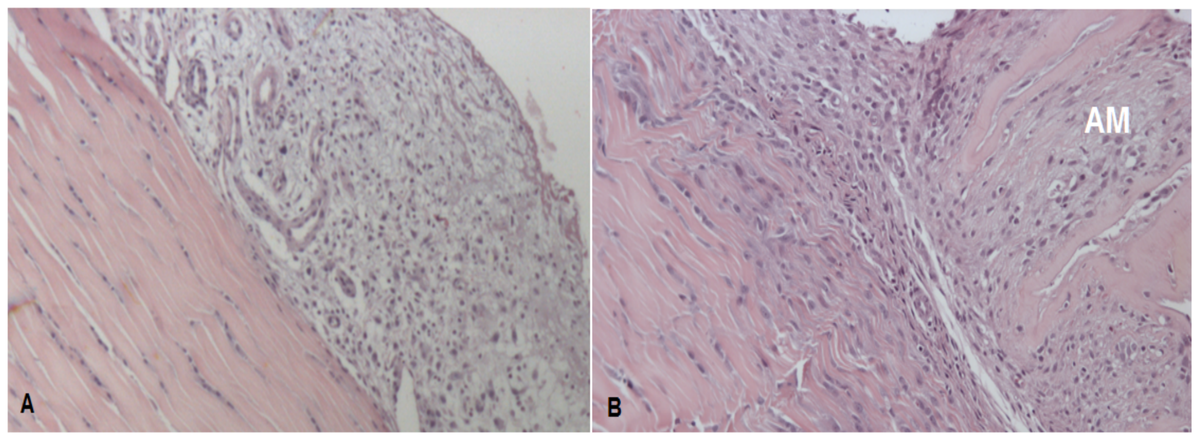


Fig. 4- Group T: (A) interface of AM with the tendon tissue at 3 days experimental time; (B) fusion of AM and tendon tissue at 7 days experimental time (HE and 20x).

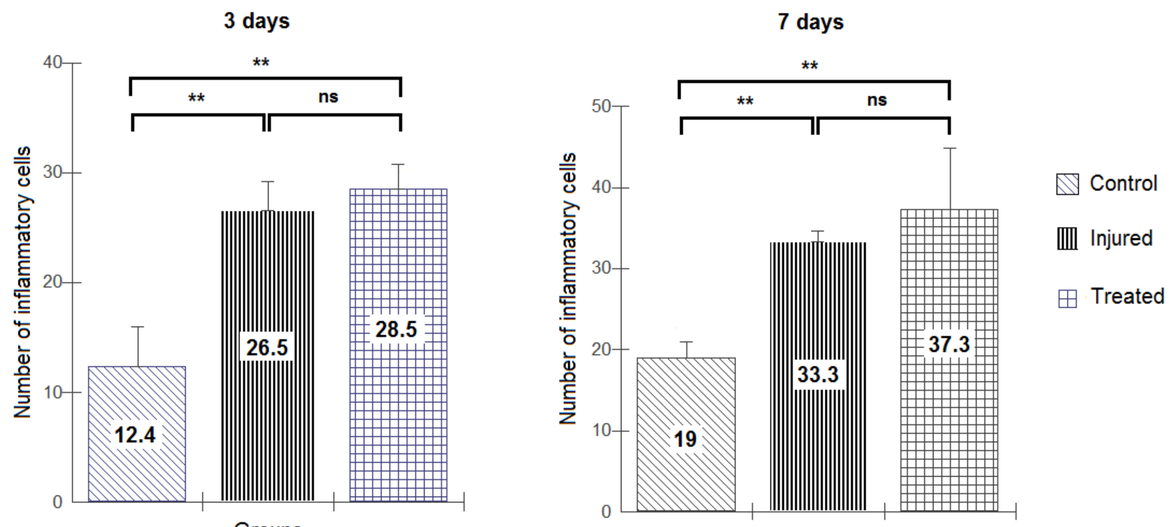


Fig. 5- Mean and standard deviation of inflammatory cell count in the experimental groups on 3 and 7 days. The statistical significance values are indicated by ** ($p<0.01$) and ns (not significant).

CONCLUSION

This results suggest that AM presents biocompatibility with the tendon tissue and did not induce the increase in the inflammatory response in the treatment of tendinopathy in rats.

FINANCIAL SOURCE: CAPES