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Human Polymorphonuclear Neutrophil Apoptosis is Inhibited by Treponema Pallidum Through Both Intrinsic and Extrinsic Mechanisms

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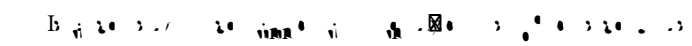
Abstract

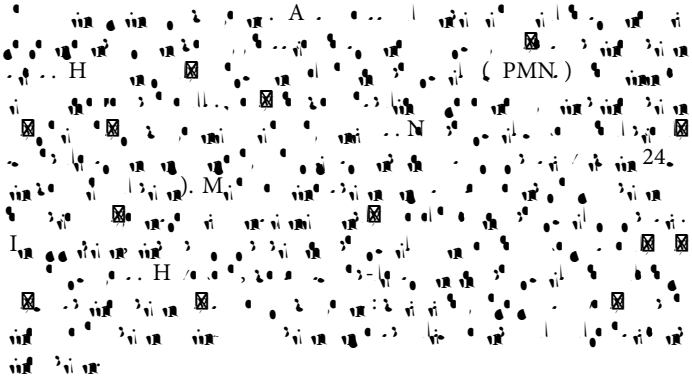
Treponema pallidum is a “stealth pathogen” responsible for infectious sexually transmitted diseases. Although neutrophils are usually present in skin lesions of early syphilis the role of these cells in infection has barely been investigated. Neutrophils are short-lived cells that undergo constitutive apoptosis, and phagocytosis usually accelerates this process. Here, we demonstrated that human polymorphonuclear neutrophils (hPMNs) could phagocytose . An unexpected discovery was that inhibited hPMNs apoptosis markedly in an opsonin-independent manner. Furthermore, this phenomenon was not afected by bacterial viability, as detected by annexin V, morphology studies, and TUNEL staining. Exploration of the underlying mechanism showed that expression of the cleaved forms of caspase-3, −8, and −9 and efector caspase activity were diminished signifcantly in -infected hPMNs [1-15]. also impaired staurosporine- and anti-Fas-induced signaling for neutrophil apoptosis. Of note, these efects were accompanied by inducing the autocrine production of the anti-apoptotic cytokine IL-8. Taken together, our data revealed that could inhibit the apoptosis of hPMNs through intrinsic and extrinsic pathways and provide new insights for understand.

Introduction

Subjective heading

Discussion





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PMN. P A C C (H , C). H H E C C H D 1964

T. I *T.* I *T.* H H / *T.* E *T.*

NEL (B I B). B PMN. 4% 30 0.2% -100 PBS 5 P 1 37 °C. A PBS A M M 4′,6- -2- (B I B). A 200 (N , J). G I J (N I H , B , MD, SA).

(S) F I M HEPES- RPMI 1640 . F -3, -8 -9, -G 3/7, 8, 9 (P , M I, SA), B PMN. (5 104) 100 L 96- (F S) . E C -G R , 500 30 , 2 (H ; B / I , SA. N MOI 10. A 4% 0.3% -100. A 5% PBS 30 (1:3000 A , C , K) 1 PBS (PBS / 0.05% 20) CO2- (1:300 A) 30 . N 4′,6- -2- (B I B , SA C),

PMN. P F 555 R (1:1000 A). A 100 A

D ANOVA ( ) ANOVA ( ) . S P 0.05 P 8.0 (G P , SA D , .

H PMN. 500 30 P (A , G) ED. A N 1 107 / L 2 107 / L. PMN. 95% G PMN. 98% .

Bacterial strains

(N) (B) 5 107 . R A 10 14 10 L (0.9%) N Cl 10% - 30 (5 500 ,) F - 56 °C 1 20 °C LIVE/DEAD B L K (F S) / (R. E) M R. E S .

Infection of neutrophils

N 1 106/ L RPMI 1640 2 M L- (G , G L , N , SA), 10 M (F S), 10% (M , B MA, SA). B 50% (NH) RPMI 1640 30 34 °C 1.5% O2. (O) (MOI) 10:1 . PMN. MOI 0, 1, 5, 10, 20 24. I (MOI = 10) PMN. 0, 6, 12, 24, 36, 48 . A 34 1.5% O_2, 5% CO_2, 93.5% N2 , H

500 30
1 107 / L 2 107 / L,
N HPMN
G
PMN. 98

A (N) /
L 5 107
3-5 .
R 10 14
10 L N C 10% 30

Infection of neutrophils

I RPMI 1640 2 M L- (G ,
G L , N , A), 10 M HEPE (, F),
1 106/ L. (M , B MA, A).
50
(NH) RPMI 1640 30
34 C 1.5 O2
PMN. 24 (O)
(MOI) 10:1