ATP Induces IL-1 ? Secretion in Neisseria gonorrhoeae-Infected Human Macrophages by a Mechanism Not Related to the NLRP3/ASC/Caspase-1 Axis

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Neisseria gonorrhoeae (Ngo) has developed multiple immune evasion mechanisms involving the innate and adaptive immune responses. Recent findings have reported that Ngo reduces the IL-1? secretion of infected human monocyte-derived macrophages (MDM). Here, we investigate the role of adenosine triphosphate (ATP) in production and release of IL-1? in Ngo-infected MDM. We found that the exposure of Ngo-infected MDM to ATP increases IL-1? levels about ten times compared with unexposed Ngo-infected MDM ($P<0.01$). However, we did not observe any changes in inflammasome transcriptional activation of speck-like protein containing a caspase recruitment domain (CARD) (ASC, $P>0.05$) and caspase-1 (CASP1, $P>0.05$). In addition, ATP was not able to modify caspase-1 activity in Ngo-infected MDM but was able to increase pyroptosis ($P>0.01$). Notably ATP treatment defined an increase of positive staining for IL-1? with a distinctive intracellular pattern of distribution. Collectively, these data demonstrate that ATP induces IL-1? secretion by a mechanism not related to the NLRP3/ASC/caspase-1 axis and likely is acting at the level of vesicle trafficking or pore formation.