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El confort social a ratonas embarazadas estresadas mejora el cuidado maternal.

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EL CONFORT SOCIAL A RATONAS EMBARAZADAS ESTRESADAS MEJORA EL CUIDADO MATERNAL

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RESUMEN

El estrés materno durante el embarazo afecta a la descendencia a través del cuidado postnatal. Este estudio evaluó si las acciones de consuelo hacia una ratona embarazada estresada mejoran el cuidado postnatal de sus crías. Desde el día 1 hasta el 12 de gestación (DG1-DG12), las ratonas embarazadas fueron expuestas diariamente y de forma aleatoria a uno de cuatro estresores. Desde DG13 hasta el parto, se alojaron con una hembra conocida como soporte (grupo ESA) o solas (grupo ES). Un tercer grupo no expuesto al estrés fue alojado en las mismas condiciones (grupo CTA). Antes del apareamiento no se observaron diferencias significativas en comportamientos sociales entre madres y soportes en ESA y CTA. Durante el embarazo, las parejas ESA mostraron mayor acicalamiento mutuo y olfateo que CTA, sugiriendo conducta prosocial inducida por el estrés. Se evaluaron conductas maternas del día 1 al 6 postnatal. Las madres ES brindaron menor calidad y cantidad de cuidado materno que las de los grupos ESA y CTA. No hubo diferencias en lactancia arqueada ni en acicalamiento entre ESA y CTA, lo que sugiere que el soporte social mejoró el cuidado. En conclusión, el apoyo social puede mitigar efectos negativos del estrés prenatal.

Palabras clave

Estrés prenatal - Comportamiento prosocial - Cuidado maternal - Desarrollo postnatal

ABSTRACT

SOCIAL SUPPORT ENHANCES MATERNAL CARE QUALITY IN STRESSED PREGNANT MICE

Maternal stress during pregnancy can impact offspring through the quality of postnatal care. This study evaluated whether comforting behaviors toward a stressed pregnant mouse improve the postnatal care of her pups. From gestational day 1 to 12 (GD1–GD12), pregnant mice were exposed once daily to one of four stressors randomly. From GD13 until birth, mice were housed either with a familiar female termed “support” (ESA group) or alone (ES group). A third group, not exposed to stress, was housed under the same conditions (CTA group). Prior to mating, no significant differences were observed in social behaviors between dams and supports in ESA and CTA groups. During pregnancy, ESA pairs displayed increased allogrooming and sniffing compared to CTA, suggesting prosocial behavior triggered by stress. Maternal care behaviors were assessed from postnatal day 1 to 6. Results indicated ES dams provided lower quality and quantity of maternal care than ESA and CTA dams. No differences were found between ESA and CTA in arched-back nursing or pup licking/grooming, suggesting social support improved caregiving. Thus, social support can mitigate the negative effects of prenatal stress on offspring development.

Keywords

Prenatal stress - Prosocial behavior - Maternal care - Postnatal development

BIBLIOGRAFÍA

Almeida, D. M., Charles, S. T., Mogle, J., Drewelies, J., Aldwin, C. M., Spiro, A., et al. (2020). Charting adult development through (historically changing) daily stress processes. *American Psychologist, 75*(4), 511-524. https://doi.org/10.1037/AMP0000597

Cruceanu, C., Matosin, N., & Binder, E. B. (2017). Interactions of early-life stress with the genome and epigenome: From prenatal stress to psychiatric disorders. *Current Opinion in Behavioral Sciences, 14*, 167-171. https://doi.org/10.1016/J.COBEHA.2017.04.001

Dugatkin, L. A. (2007). Inclusive fitness theory from Darwin to Hamilton. *Genetics, 176*(3), 1375-1380. https://doi.org/10.1093/GENETICS/176.3.1375

Dunfield, K. A. (2014). A construct divided: Prosocial behavior as helping, sharing, and comforting subtypes. *Frontiers in Psychology, 5*, 958. https://doi.org/10.3389/fpsyg.2014.00958

Eckstein, M., Mamaev, I., Ditzen, B., & Sailer, U. (2020). Calming effects of touch in human, animal, and robotic interaction-Scientific state-of-the-art and technical advances. *Frontiers in Psychiatry, 11*, 555058. https://doi.org/10.3389/FPSYT.2020.555058

Fleming, T. P., Watkins, A. J., Velazquez, M. A., Mathers, J. C., Prentice, A. M., Stephenson, J., et al. (2018). Origins of lifetime health around the time of conception: Causes and consequences. *The Lancet, 391*(10132), 1842-1852. https://doi.org/10.1016/S0140-6736(18)30312-X

Franklin, K. B. J., & Paxinos, G. (2007). *The mouse brain in stereotaxic coordinates* (3rd ed.). Academic Press.

Keysers, C., Knapska, E., Moita, M. A., & Gazzola, V. (2022). Emotional contagion and prosocial behavior in rodents. *Trends in Cognitive Sciences, 26*(8), 688-706. https://doi.org/10.1016/j.tics.2022.05.005

Kinsella, M. T., & Monk, C. (2009). Impact of maternal stress, depression and anxiety on fetal neurobehavioral development. *Clinical Obstetrics and Gynecology, 52*(3), 425-440. https://doi.org/10.1097/GRF.0B013E3181B52DF1

Korisky, A., Eisenberger, N. I., Nevat, M., Weissman-Fogel, I., & Shamay-Tsoory, S. G. (2020). A dual-brain approach for understanding the neural mechanisms that underlie the comforting effects of social touch. *Cortex, 127*, 333-346. https://doi.org/10.1016/J.CORTEX.2020.01.028

Jakubiak, B. K., & Feeney, B. C. (2017). Affectionate touch to promote relational, psychological, and physical well-being in adulthood: A theoretical model and review of the research. *Personality and Social Psychology Review, 21*(3), 228-252. https://doi.org/10.1177/1088868316650307

Li, L., Zhang, L. Z., He, Z. X., Ma, H., Zhang, Y. T., Xun, Y. F., et al. (2021). Dorsal raphe nucleus to anterior cingulate cortex 5-HTergic neural circuit modulates consolation and sociability. *eLife, 10*, e67638. https://doi.org/10.7554/ELIFE.67638

Lim, K. Y., & Hong, W. (2023). Neural mechanisms of comforting: Prosocial touch and stress buffering. *Hormones and Behavior, 153*, 105391. https://doi.org/10.1016/J.YHBEH.2023.105391

Mbiydzenyuy, N. E., Hemmings, S. M. J., & Qulu, L. (2022). Prenatal maternal stress and offspring aggressive behavior: Intergenerational and transgenerational inheritance. *Frontiers in Behavioral Neuroscience, 16*, 977416. https://doi.org/10.3389/FNBEH.2022.977416

McCreary, J. K., & Metz, G. A. S. (2016). Environmental enrichment as an intervention for adverse health outcomes of prenatal stress. *Environmental Epigenetics, 2*(3), dvw013. https://doi.org/10.1093/EEP/DVW013

Monthé-Drèze, C., Aris, I. M., Rifas-Shiman, S. L., Shivappa, N., Hebert, J. R., Oken, E., et al. (2023). The role of prenatal psychosocial stress in the associations of a proinflammatory diet in pregnancy with child adiposity and growth trajectories. *JAMA Network Open, 6*(1), e2251367. https://doi.org/10.1001/JAMANETWORKOPEN.2022.51367

Nolvi, S., Merz, E. C., Kataja, E. L., & Parsons, C. E. (2023). Prenatal stress and the developing brain: Postnatal environments promoting resilience. *Biological Psychiatry, 93*(10), 942-952. https://doi.org/10.1016/J.BIOPSYCH.2022.11.023

Peen, N. F., Duque-Wilckens, N., & Trainor, B. C. (2021). Convergent neuroendocrine mechanisms of social buffering and stress contagion. *Hormones and Behavior, 129*, 104933. https://doi.org/10.1016/J.YHBEH.2021.104933

Penner, L. A., Dovidio, J. F., Piliavin, J. A., & Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology, 56*(1), 365-392. https://doi.org/10.1146/ANNUREV.PSYCH.56.091103.070141

Perini, I., Olausson, H., & Morrison, I. (2015). Seeking pleasant touch: Neural correlates of behavioral preferences for skin stroking. *Frontiers in Behavioral Neuroscience, 9*, 8. https://doi.org/10.3389/FNBEH.2015.00008

Pfattheicher, S., Nielsen, Y. A., & Thielmann, I. (2022). Prosocial behavior and altruism: A review of concepts and definitions. *Current Opinion in Psychology, 44*, 124-129. https://doi.org/10.1016/J.COPSYC.2021.08.021

Rees, S., Channon, S., & Waters, C. S. (2019). The impact of maternal prenatal and postnatal anxiety on children's emotional problems: A systematic review. *European Child & Adolescent Psychiatry, 28*, 257-280. https://doi.org/10.1007/S00787-018-1173-5

Rice, F., Harold, G. T., Boivin, J., Van Den Bree, M., Hay, D. F., & Thapar, A. (2010). The links between prenatal stress and offspring development and psychopathology: Disentangling environmental and inherited influences. *Psychological Medicine, 40*(2), 335-342. https://doi.org/10.1017/S0033291709005911

Van den Bergh, B. R. H., van den Heuvel, M. I., Lahti, M., Braeken, M., de Rooij, S. R., Entringer, S., et al. (2020). Prenatal developmental origins of behavior and mental health: The influence of maternal stress in pregnancy. *Neuroscience & Biobehavioral Reviews, 117*, 26-64. https://doi.org/10.1016/j.neubiorev.2017.07.003

Wadhwa, P. D., Entringer, S., Buss, C., & Lu, M. C. (2011). The contribution of maternal stress to preterm birth: Issues and considerations. *Clinical Perinatology, 38*(3), 351-384. https://doi.org/10.1016/J.CLP.2011.06.007

Wu, Y. E., Dang, J., Kingsbury, L., Zhang, M., Sun, F., Hu, R. K., et al. (2021). Neural control of affiliative touch in prosocial interaction. *Nature, 599*(7885), 262-267. https://doi.org/10.1038/S41586-021-03962-W

Wu, Y. E., & Hong, W. (2022). Neural basis of prosocial behavior. *Trends in Neurosciences, 45*(9), 749-762. https://doi.org/10.1016/J.TINS.2022.06.008

Wu, Y., Lu, Y.-C., Jacobs, M., Pradhan, S., Kapse, K., Zhao, L., et al. (2020). Association of prenatal maternal psychological distress with fetal brain growth, metabolism, and cortical maturation. *JAMA Network Open, 3*(1), e1919940. https://doi.org/10.1001/jamanetworkopen.2019.19940

Zhang, M., Wu, Y. E., Jiang, M., & Hong, W. (2024). Cortical regulation of helping behaviour towards others in pain. *Nature, 626*(8000), 136-144. https://doi.org/10.1038/S41586-023-06973-X