ABSTRAK

PAPARAN STRES FISIK DAN PSIKIS SELAMA MASA KEBUNTINGAN MENINGKATKAN EKSPRESI CASPASE-3 DAN MENURUNKAN JUMLAH SEL GLIA *CEREBRUM* DAN *CEREBELLUM* MENCIT *(MUS MUSCULUS*) BARU LAHIR

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Tujuan: Menganalis pengaruh paparan stres fisik, psikis dan perpaduan selama kebuntingan terhadap ekspresi caspase-3 dan jumlah sel glia *cerebrum* dan *cerebellum Mus musculus* baru lahir. **Metode:** Penelitian eksperimental menggunakan duapuluh empat *Mus musculus* bunting. Subyek dirandomisasi menjadi empat kelompok yaitu, kelompok paparan stres fisik (K1), kelompok paparan stres psikis (K2), kelompok paparan stres perpaduan psikis dan fisik (K3), dan kelompok kontrol (K4). Perlakuan diberikan pada hari ke 6-15 kebuntingan. Pada hari ke-16 fetus dilahirkan secara *section caesarea*, jaringan otak mencit baru lahir diambil kemudian dilakukan pemeriksaan imunohistokimia untuk menilai ekspresi caspase-3 dan *hyematoxylin-eosin* untuk menilai jumlah sel glia pada 5 lapang pandang dengan pembesaran mikroskop 400 kali. **Hasil:** Ekspresi caspase-3 di *cerebrum* dan *cerebellum* kelompok paparan stres fisik, psikis dan perpaduan psikis dan fisik lebih tinggi dibandingkan dengan kontrol (4.17 ± 1.18 dan 3.90 ± 1.06).Sedangkan jumlah sel glia (Astrosit, Oligodendrosit dan Mikroglia) di *cerebrum* dan *cerebellum* kelompok paparan stres fisik, psikis dan perpaduan psikis dan fisik lebih rendah dibandingkan dengan kontrol (Astrosit 19.13 ± 1.16, Oligodendrosit 21.37 ± 0.90, Mikroglia 20.10 ± 1.49) dan (Astrosit 19.87 ± 1.07, Oligodendrosit 21.03 ± 1.17, Mikroglia 19.57 ± 1.31). Terdapat perbedaan signifikan ekspresi caspase-3 dan jumlah sel glia di *cerebrum* dan *cerebellum* antar kelompok ($p<0.05$). **Kesimpulan:** Paparan stres fisik dan psikis selama masa kebuntingan terbukti dapat meningkatkan ekspresi caspase-3 dan menurunkan jumlah sel glia di *cerebrum* dan *cerebellum* mencit baru lahir.

Kata Kunci : *Mus musculus*, Kebuntingan, Stres, *Cerebrum* dan *Cerebellum*, Sel Glia, Caspase-3

ABSTRACT

PHYSICAL AND PSYCHOLOGICAL STRESS EXPOSURE DURING PREGNANCY INCREASING CASPASE-3 EXPRESSION AND DECREASING THE NUMBER OF GLIA *CELLS* IN THE *CEREBRUM AND CEREBELLUM* OF NEWBORN MICE *(MUS MUSCULUS*)

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Objective: To analyze the effect of exposure to physical, psychological and combined stress during pregnancy on the expression of caspase-3 and the number of glial cells of the *cerebrum* and *cerebellum of* newborn *Mus musculus*. **Method:** Experimental research using twenty four *Mus musculus* pregnant. Subjects were randomized into four groups, consisting of a physical stress exposure group (K1), a psychological stress exposure group (K2), a psychological and physical stress exposure group (K3), and a control group (K4). Stress exposure is given on days 6-15 of pregnancy. On the 16th day, fetus were taken by section caesarea, The brain tissue of newborn mice was taken and then performed immunohistochemical examination to assess the expression of caspase-3 and *hyematoxylin-eosin* to assess the number of glial cells in 5 fields of view with a microscope magnification of 400 times. **Result:** The expression of caspase-3 in the *cerebrum* and *cerebellum* groups exposed to physical, psychological stress and a combination of psychic and physical was higher than the control group (4.17 ± 1.18 and 3.90 ± 1.06). Meanwhile, the number of glial cells (Astrocytes, Oligodendrocytes and Microglia) in the *cerebrum* and *cerebellum in the* group exposed to physical, psychological stress and a combination of psychological and physical stress was lower than the control group (Astrosit 19.13 ± 1.16, Oligodendrosit 21.37 ± 0.90, Mikroglia 20.10 ± 1.49) and (Astrosit 19.87 ± 1.07, Oligodendrosit 21.03 ± 1.17, Mikroglia 19.57 ± 1.31). There was a significant difference in the expression of caspase-3 and the number of glial cells in the *cerebrum* and *cerebellum* between groups ($p < 0.05$). **Conclucion:** Exposure to physical and psychological stress during pregnancy has been shown to increase caspase-3 expression and decrease the number of glial cells in the *cerebrum* and *cerebellum* of newborn mice.

Keywords: *Mus musculus*, Pregnancy, Stress, *Cerebrum* and *Cerebellum*, Glial Cells, Caspase-3