Supplementary table 1 Percentage of reduction in seizure frequency from baseline after Mg- VPA treatment

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| --- | --- | --- | --- | --- |
| case | Seizure type | Mean number of seizures per month for 12 months prior to the Mg-VPA treatment | Mean number of seizures per month for 12 months after Mg- VPA treatment | the percentage of reduction in seizure frequency(%) |
| Mg -VPA-1  Mg -VPA-2  Mg -VPA-3  Mg -VPA-4  Mg -VPA-5  Mg -VPA-6  Mg -VPA-7  Mg -VPA-8  Mg -VPA-9  Mg -VPA-10  Mg -VPA-11  Mg -VPA-12  Mg -VPA-13  Mg -VPA-14  Mg -VPA-15  Mg -VPA-16  Mg -VPA-17  Mg -VPA-18  Mg -VPA-19  Mg -VPA-20  Mg -VPA-21  Mg -VPA-22  Mg -VPA-23  Mg -VPA-24  Mg -VPA-25  Mg -VPA-26  Mg -VPA-27  Mg -VPA-28  Mg -VPA-29  Mg -VPA-30  Mg -VPA-31  Mg -VPA-32  Mg -VPA-33  Mg -VPA-34  Mg -VPA-35  Mg -VPA-36  Mg -VPA-37  Mg -VPA-38  Mg -VPA-39  Mg -VPA-40  Mg -VPA-41  Mg -VPA-42  Mg -VPA-43  Mg-VPA-44  Mg -VPA-45  Mg -VPA-46  Mg -VPA-47  Mg -VPA-48  Mg -VPA-49  Mg -VPA-50  Mg -VPA-51  Mg -VPA-52  Mg -VPA-53  Mg -VPA-54  Mg -VPA-55  Mg -VPA-56  Mg -VPA-57  Mg -VPA-58  Mg -VPA-59  Mg -VPA-60  Mg -VPA-61  Mg -VPA-62  Mg- VPA-63  Mg -VPA-64  Mg -VPA-65  Mg -VPA-66  Mg -VPA-67 | GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  Absence  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  Absence  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  CPS and GTCs  GTCs  CPS and GTCs  GTCs  GTCs  CPS and GTCs  GTCs  CPS and GTCs  CPS and GTCs  CPS  CPS  CPS and GTCs  CPS  CPS and GTCs  CPS  PS  Absence and CPS  PS  Absence and CPS | 9  8  9.4  10  11.5  7  8  9  10  12.8  13  14  15  10.5  9  8  7.3  8  9.9  10  11  12.5  14.3  15.5  7.5  8.9  9  10  12  13.5  9  8.9  10  9  7.4  8  9.5  10.5  8  7  9.5  13  15.2  18  20.5  11  12.2  14  17.1  16  8.1  7.2  10.5  13.9  13  14  16  18.1  7.2  8  9.1  10.2  11.2  10  9.3  20.2  15 | 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  2  2  1  1  1.1  3  2.2  4  4  2  2  5  7.3  6  3.3  3  4.2  5  5  6  7  15  5.3  6.3  8  8.1  10  11.4  10.8  23.1  17.5 | seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  87.5  78.9  81.0  87.5  85.7  88.4  76.9  85.5  77.8  80.5  81.8  83.6  64.0  57.3  62.5  59.3  58.3  60.0  64.0  61.5  57.1  56.3  17.1  26.4  21.3  12.1  20.6  10.7  seizure increased  seizure increased  seizure increased  seizure increased |

GTCs ,Generalized tonic clonic seizures; PS, Partial seizure; CPS, Complex partial seizure.

Supplementary table 2 Percentage of reduction in seizure frequency from baseline after Na-VPA treatment

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| --- | --- | --- | --- | --- |
| case | Seizure type | Mean number of seizures per month for 12 months prior to the Mg-VPA treatment | Mean number of seizures per month for 12 months after Mg- VPA treatment | the percentage of reduction in seizure frequency(%) |
| Na -VPA-1  Na -VPA-2  Na -VPA-3  Na -VPA-4  Mg -VPA-5  Na -VPA-6  Na -VPA-7  Na -VPA-8  Na -VPA-9  Na -VPA-10  Na -VPA-11  Na -VPA-12  Na -VPA-13  Na -VPA-14  Na -VPA-15  Na -VPA-16  Na -VPA-17  Na -VPA-18  Na -VPA-19  Na -VPA-20  Na -VPA-21  Na -VPA-22  Na -VPA-23  Na -VPA-24  Na -VPA-25  Na -VPA-26  Na -VPA-27  Na -VPA-28  Na -VPA-29  Na -VPA-30  Na -VPA-31  Na -VPA-32  Na -VPA-33  Na -VPA-34  Na -VPA-35  Na -VPA-36  Na -VPA-37  Na -VPA-38  Na -VPA-39  Na -VPA-40  Na -VPA-41  Na -VPA-42  Na -VPA-43  Na -VPA-44  Na -VPA-45  Na -VPA-46  Na -VPA-47  Na -VPA-48  Na -VPA-49  Na -VPA-50  Na -VPA-51  Na -VPA-52  Na -VPA-53 | GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  Absence  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  GTCs  CPS and GTCs  CPS and GTCs  GTCs  GTCs  CPS and GTCs  CPS and GTCs  GTCs  GTCs  GTCs  GTCs  PS  CPS  PS  CPS  PS  PS  CPS  PS  CPS  PS and GTCs  CPS  CPS and GTCs  PS and GTCs  PS and GTCs | 9  8.3  9  10.2  11  7  8  9  10  12  13  14.1  15  10  9.3  8  7  8.8  9  10.5  10  15.2  12  11  9  8  8  7  14  16  17  18  9.2  10  11  14  16  9  10  8  10  10  13.2  15  9.1  16.2  18.5  20  7.5  9.2  11.4  12  11.4 | 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  2  2  1.1  2  3  2  3  6.5  6  8  8  3  4  4  6.3  5  3  3  5  8.2  7  10  13  7  10.2  10  21  9.1  10.5  12  15.8  15 | seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free seizure-free  seizure-free seizure-free seizure-free  seizure-free  seizure-free  seizure-free  90.0  86.8  83.3  90.0  77.8  62.5  75.0  57.1  53.6  62.5  52.9  55.5  67.4  60.0  63.6  55.0  68.8  66.7  70.0  37.5  18.0  30.0  24.2  13.3  23.1  37.0  45.9  seizure increased  seizure increased  seizure increased  seizure increased  seizure increased  seizure increased |

GTCs ,Generalized tonic clonic seizures; PS, Partial seizure; CPS, Complex partial seizure.

Supplementary table 3 The baseline demographic characteristics of the patients according to their BMI categories.

|  |  |  |  |
| --- | --- | --- | --- |
| case | Weight(Kg) | Height(m) | BMI(Kg/m2) |
| Mg -VPA-1 | 47.4 | 1.6 | 18.5 |
| Mg -VPA-2 | 50 | 1.55 | 20.8 |
| Mg -VPA-3 | 55 | 1.65 | 20.2 |
| Mg -VPA-4 | 56.2 | 1.57 | 22.8 |
| Mg -VPA-5 | 50 | 1.55 | 20.8 |
| Na -VPA-1 | 50 | 1.65 | 18.3 |
| Na -VPA-2 | 51.5 | 1.6 | 20.1 |
| Na -VPA-3 | 55 | 1.68 | 19.5 |
| Na -VPA-4 | 54 | 1.5 | 24 |

BMI: body mass index; Underweight defined as BMI < 18 kg/m2; Overweight defined as BMI > 23–24.9 kg/m2;Obese defined as BMI > 25 kg/m2.

Supplementary table 4 The BMI categories of patients with epilepsy at the end of study

|  |  |  |  |
| --- | --- | --- | --- |
| case | Weight(Kg) | Height(m) | BMI(Kg/m2) |
| Mg -VPA-1 | 59.4 | 1.6 | 23.2 |
| Mg -VPA-2 | 56.5 | 1.55 | 23.5 |
| Mg -VPA-3 | 65.3 | 1.65 | 24 |
| Mg -VPA-4 | 61.9 | 1.57 | 25.1 |
| Mg -VPA-5 | 58 | 1.55 | 24.1 |
| Na -VPA-1 | 65.9 | 1.65 | 24.2 |
| Na -VPA-2 | 62 | 1.6 | 24.2 |
| Na -VPA-3 | 67.8 | 1.68 | 24 |
| Na -VPA-4 | 57.4 | 1.5 | 25.5 |

BMI: body mass index; Underweight defined as BMI < 18 kg/m2; Overweight defined as BMI > 23–24.9 kg/m2;Obese defined as BMI > 25 kg/m2.