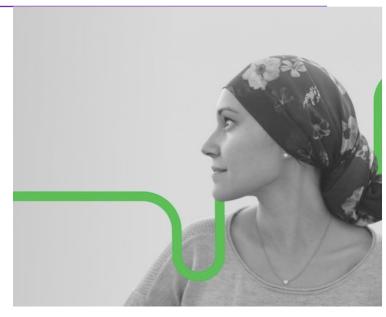
Real World Evidence in Taiwan: Breast Cancer and Astragalus Polysaccharide Lyo. Injection

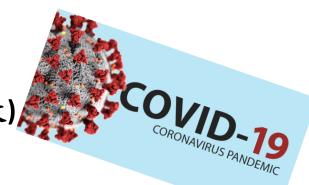
施昇良醫師 高雄醫學大學附設中和紀念醫院 乳房外科





Polysaccharides of Astragalus membranaceus (PG2 Lyo. Injection) 健保給付規定

第三節代謝及營養劑 (自110年3月1日生效)



使用本藥品應符合下列各條件:

- 1. 用於第四期因疾病進展導致中重度疲憊之乳癌成人患者(不含住院安寧療護病患)。
- 2. 臨床上需符合ICD-10診斷標準,病歷上應詳細記載疲憊分數 ≥4 (BFI-T或 VAS),經其他處置無效之中重度癌因性疲憊症患者。
- 3. ECOG需為0-2之患者。
- 4. 每位病人終生給付6支為上限。
- 5. 需經事先審查核准後使用。

PG2®健保給付真實世界驗證(RWE)

✓ Effective in Fatigue Improvement:

- 完成**6劑PG2**治療病人疲憊改善程度明顯高於使用**4**劑PG2 治療病人
- · 約6成病人使用6劑PG2後疲憊指數可降到4分以下(VAS<4)

✓ Satisfaction with treatment outcomes:

- 91% 病人完成 6 劑 PG2 治療後覺得疲憊有所改善
- 85% 醫師對於完成6劑 PG2 治療後的效果感到滿意
- 92% 醫師在完成6劑 PG2 治療後會建議病人持續PG2治療

! Early intervention to help patients:

• 此260位以上病人健保給付使用經驗,完成前已死亡分別 在4劑和6劑,各約6%和5%,共約11%(29位病人)

REBORN: Real-world Effects of Breast Cancer Patients On Receiving PG2 Treatment

- ✓ This study is accepted for an ePoster (No. C082) and luncheon symposium presentation at the 2024 Taipei International Breast Cancer Symposium (TIBCS), Taipei, on October 26-27, 2024.
- ✓ Accepted as Abstract #745 for the 2024 San Antonio Breast Cancer Symposium (SABCS).

Study Center

- 1. Taichung Veterans General Hospital
- 2. Kaohsiung Medical University Hospital
- 3. E-Da Cancer Hospital
- 4. Taipei Chang Gung Memorial Hospital
- Tri-Service General Hospital
- China Medical University Hospital
- 7. Linkou Chang Gung Memorial Hospital
- MacKay Memorial Hospital
- 9. Keelung Chang Gung Memorial Hospital

Data Collection Period for Analysis

01/Mar/2021~31/Dec/2023

This study is accepted for an ePoster (No. C082) and luncheon symposium presentation at the 2024 Taipei International Breast Cancer Symposium (TIBCS), Taipei, on October 26-27, 2024.

Accepted as Abstract #745 for the 2024 San Antonio Breast Cancer Symposium (SABCS).

Study Aim	To assess fatigue improvement and patient satisfaction in breast cancer patients receiving PG2 injections covered by Taiwan's NHI through real-world data analysis.						
Design	Multi-center retrospective study						
Patients	Stage IV breast cancer patients diagnosed with moderate to severe cancer-related fatigue (CRF) based on ICD-10 criteria, after failing to respond to other interventions, with an ECOG performance status of 0-2. R53.0						
Efficacy outcomes	Primary Endpoint: Fatigue improvement. Secondary Endpoints: Fatigue treatment satisfaction: Clinical Global Impression-Improvement (CGI-I) and overall clinical evaluation by physicians						

Objectives	This study was performed to evaluate the clinical use, fatigue improvement, and treatment satisfaction of breast cancer patients with PG2 Lyo. injection.
Methodology	This was a single arm, multicenter, and retrospective study.
Inclusion Criteria	Breast cancer patients treated by PG2 Lyo. injection under Taiwan National Health Insurance (NHI). ✓ Aged 20 years and above; ✓ Stage IV breast cancer; ✓ Experienced moderate to severe fatigue that met the diagnostic criteria of ICD-10, with other interventions proving ineffective; ✓ ECOG 0-2.

Study Design

Endpoint for Clinical Benefit Evaluation	Primary Endpoint: Fatigue improvement. Secondary Endpoints: Fatigue treatment satisfaction: Clinical Global Impression-Improvement (CGI-I) and overall clinical evaluation by physicians, and patient's expectation to continue CRF treatment
Planned Number of Subjects	 Enrolled: 335 Analyzed*: at least 200 * Subjects who had any available data for primary endpoint analyzation (at least have 2 data: baseline and 4-Dose or 6-Dose VAS Fatigue Score data).
Data Collection Period	Mar 1, 2021 to Dec 31, 2023

Study Design

	1	2	3
Collect Item	Pre-treatment	Interim	EOS
	Baseline	4-Dose	6-Dose
Demographic ¹	V		
Disease Characteristic ²	V		
Cancer Treatment Information ²	V	V	V
Visual Analog Fatigue Scale (0-10) by Patients	V	V	V
Fatigue Clinical Global Impression-Improvement (CGI-I) by Patients		V	V
ECOG	V	V	V
Weight	V	V	V
Lab data-Hematology	V	V	V
Cancer drug compliance record	V	V	V
CRF Pharmacological Treatment Record		V	V
Patient Expectations to Continue Use Record			V
Overall Evaluation by Physician			V

- 1: Demographic information: height, weight, age, sex etc.
- 2: Disease characteristics and cancer treatment information: primary tumor diagnosis, current tumor diagnosis, menopausal status, hormone receptor status, HER-2 Status, proliferation index, molecular type and categories of previous/concurrent cancer therapies etc.



Incomplete Reason

	N	%
Before V2	55	21.07%
Data collection deadline expired	19	7.28%
Death	16	6.13%
Patient's Willingness	5	1.92%
Lost to follow-up	2	0.77%
Others*	13	4.98%
Before V3	44	16.86%
Data collection deadline expired	15	5.75%
Death	13	4.98%
Patient's Willingness	6	2.30%
Lost to follow-up	4	1.53%
Others*	6	2.30%

^{*}Rejected by NHI, case closed, disease condition issue, AE, incomplete signature on new version of ICF, hospital transfer or PG2 Injection self-funded



Disease Characteristics

Characteristics	Results	Results Characteristics			
Histological type		Menopausal Status			
N	261	N	261		
Ductal	233 (89.27%)	Premenopausal	28 (10.73%)		
Lobular	9 (3.45%)	Postmenopausal	229 (87.74%)		
Mixed	6 (2.30%)	Unknown	4 (1.53%)		
Others	10 (3.83%)	Molecular Type			
Unknown	3 (1.15%)	N	261		
Sites of Metastases		Lumina A	38 (14.56%)		
N	261	Luminal B	136 (52.11%)		
Bone	155 (59.39%)	Her-2 enriched	43 (16.48%)		
Lung	138 (52.87%)	Triple-negative	40 (15.33%)		
Liver	93 (35.63%)	Unknown	4 (1.53%)		
Lymph nodes	89 (34.10%)				
Brain	33 (12.64%)				
Skin	26 (9.96%)				
Others	37 (14.18%)	_			

- The majority were **postmenopausal** women (88%).
- The predominant histologic type of breast cancer was ductal carcinoma (89%).
- Patients with stage IV breast cancer primarily had metastases to the bone (59%), lung (53%) and liver (36%).
- Among the molecular subtypes, Luminal B was the most common (52%).

Demographic and disease characteristics

- Majority of enrolled patients were diagnosed with ductal carcinoma, with Luminal B as the predominant molecular subtype.
- Most patients were postmenopausal women with visceral metastases.

Characteristics	N=204
Age	
Mean(SD)	58.82 (10.84)
Range	27.57 ~ 83.70
BMI	
Mean(SD)	24.00 (4.50)
Range	14.83 ~ 41.41
Histological type	
Ductal	180 (88.24%)
Lobular	9 (4.41%)
Mixed	5 (2.45%)
Others	7 (3.43%)
Unknown	3 (1.47%)
Visceral Metastases	
Yes	157 (76.96%)
No	47 (23.04%)

Characteristics	N=204				
Menopausal Status					
Premenopausal	20 (9.80%)				
Postmenopausal	180 (88.24%)				
Unknown	4 (1.96%)				
Molecular Type					
Luminal A	24 (11.76%)				
Luminal B	110 (53.92%)				
Her-2 enriched	37 (18.14%)				
Triple-negative	32 (15.69%)				
Unknown	1 (0.49%)				

Previous and Current Cancer Therapy

82% of patients received PG2 Injection treatment in conjunction with chemotherapy or chemo-combo therapy.

No. Cancer Therapies/type Previous 4-Dose 6-Dose Treatment per N 261 205 162 161	iod
0 5(1.92%) 0(0.00%) 4(2.47%) 0(0.00%)	
1 121 (46.36%) 98 (47.80%) 66 (40.74%) 63 (39.13%))
Surgery 1 (0.38%) 1 (0.49%) 0 (0.00%) 0 (0.00%)	
Chemotherapy 82 (31.42%) 65 (31.71%) 46 (28.40%) 45 (27.95%))
Target 23 (8.81%) 24 (11.71%) 15 (9.26%) 13 (8.07%)	
Hormone 14 (5.36%) 7 (3.41%) 4 (2.47%) 4 (2.48%)	
Others 1 (0.38%) 1 (0.49%) 1 (0.62%) 1 (0.62%)	
2 100 (38.31%) 85 (41.46%) 73 (45.06%) 67 (41.61%))
Chemotherapy + Surgery $2(0.77\%)$ $1(0.49\%)$ $0(0.00\%)$ $0(0.00\%)$	
Chemotherapy + Target 38 (14.56%) 38 (18.54%) 35 (21.60%) 36 (22.36%))
Chemotherapy + CCRT $1 (0.38\%)$ $2 (0.98\%)$ $2 (1.23\%)$ $1 (0.62\%)$	
Chemotherapy + Hormone 22 (8.43%) 14 (6.83%) 12 (7.41%) 11 (6.83%)	
Chemotherapy + Immunotherapy $2(0.77\%)$ $2(0.98\%)$ $2(1.23\%)$ $2(1.24\%)$	
Chemotherapy + Others $0(0.00\%)$ $1(0.49\%)$ $0(0.00\%)$ $0(0.00\%)$	
Target + CCRT $1(0.38\%)$ $0(0.00\%)$ $2(1.23\%)$ $1(0.62\%)$	
Target + Hormone 31 (11.88%) 23 (11.22%) 19 (11.73%) 15 (9.32%)	
Hormone + Others* 3 (1.15%) 4 (1.95%) 1 (0.62%) 1 (0.62%)	
3 25 (9.58%) 18 (8.78%) 14 (8.64%) 22 (13.66%))
Chemotherapy + Surgery + Target 6 (2.30%) 4 (1.95%) 4 (2.47%) 4 (2.48%)	
Chemotherapy + Surgery + CCRT $1(0.38\%)$ $0(0.00\%)$ $0(0.00\%)$ $0(0.00\%)$	
Chemotherapy + Surgery + Immunotherapy $1(0.38\%)$ $0(0.00\%)$ $0(0.00\%)$ $0(0.00\%)$	
Chemotherapy + Target + CCRT 5 (1.92%) 1 (0.49%) 2 (1.23%) 3 (1.86%)	
Chemotherapy + Target + Hormone 9 (3.45%) 10 (4.88%) 8 (4.94%) 10 (6.21%)	
Chemotherapy + Target + Others $2(0.77\%)$ $0(0.00\%)$ $0(0.00\%)$ $1(0.62\%)$	
Chemotherapy + Hormone + Others $0(0.00\%)$ $0(0.00\%)$ $0(0.00\%)$ $1(0.62\%)$	
Surgery + Target + Hormone $1(0.38\%)$ $1(0.49\%)$ $0(0.00\%)$ $1(0.62\%)$	
Target + Hormone + Others* $0(0.00\%)$ $2(0.98\%)$ $0(0.00\%)$ $2(1.24\%)$	
4 and above 10 (3.83%) 4 (1.95%) 5 (3.09%) 9 (5.59%)	
Chemotherapy + Surgery + Target + CCRT $4(1.53\%)$ $0(0.00\%)$ $2(1.23\%)$ $1(0.62\%)$	
Chemotherapy + Surgery + Target + Hormone 3 (1.15%) 1 (0.49%) 1 (0.62%) 1 (0.62%)	
Chemotherapy + Surgery + Target + Immunotherapy $0 (0.00\%)$ $1 (0.49\%)$ $1 (0.62\%)$ $2 (1.24\%)$	
Chemotherapy + Target + CCRT + Hormone $0(0.00\%)$ $1(0.49\%)$ $1(0.62\%)$ $2(1.24\%)$	
Chemotherapy + Target + Hormone + Others* 2 (0.77%) 1 (0.49%) 0 (0.00%) 1 (0.62%)	
Chemotherapy + Surgery + Target + CCRT + Hormone 1 (0.38%) 0 (0.00%) 0 (0.00%) 2 (1.24%)	1

VAS Fatigue Score Change from Baseline

Patients who received 6 doses of PG2 Lyo Injection experienced significantly lower fatigue scores compared to those who received 4 doses.

Past 24-hrs

visit	N	Mean	SD	Median	Min	Max	95% CI		CI	Paired t-test from baseline
Baseline	204	6.37	1.27	6.00	3.00	10.00	6.19	~	6.54	_
4-Dose	203	4.14	1.73	4.00	0.00	10.00	3.91	~	4.38	< 0.001
6-Dose	158	3.49	1.72	3.00	0.00	8.00	3.23	~	3.76	<0.001

Paired t-test between 4-Dose and 6-Dose is <0.001

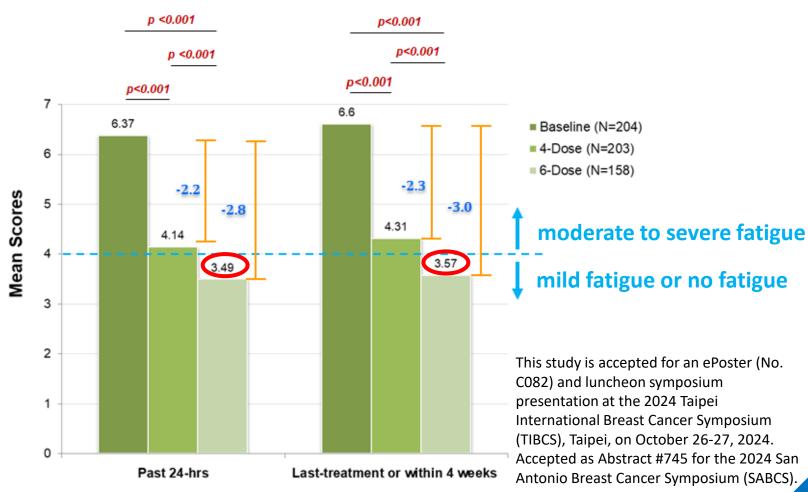
Last-treatment or within 4 weeks

visit	N	Mean	SD	Median	Min	Max	95% CI		CI	Paired t-test from baseline
Baseline	199	6.60	1.29	6.00	4.00	10.00	6.42	~	6.78	_
4-Dose	203	4.31	1.79	4.00	0.00	9.00	4.06	~	4.55	< 0.001
6-Dose	158	3.57	1.75	3.00	0.00	9.00	3.30	~	3.84	<0.001

Paired t-test between 4-Dose and 6-Dose is <0.001

VAS Fatigue Score by Visits

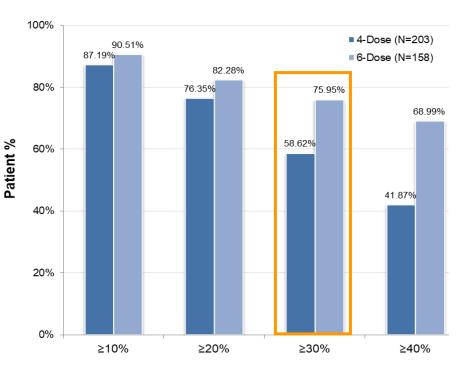
Patients who received 6 doses of PG2 Lyo. Injection had significantly lower fatigue scores than their baseline measurements (VAS score 3.49~3.57), achieving the treatment goal of a VAS score < 4



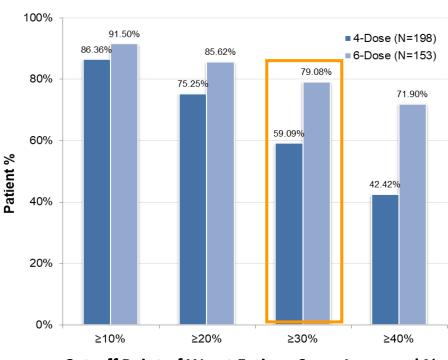
Fatigue Improvement Response Rate (by Score Change %)



Last-treatment or within 4 weeks



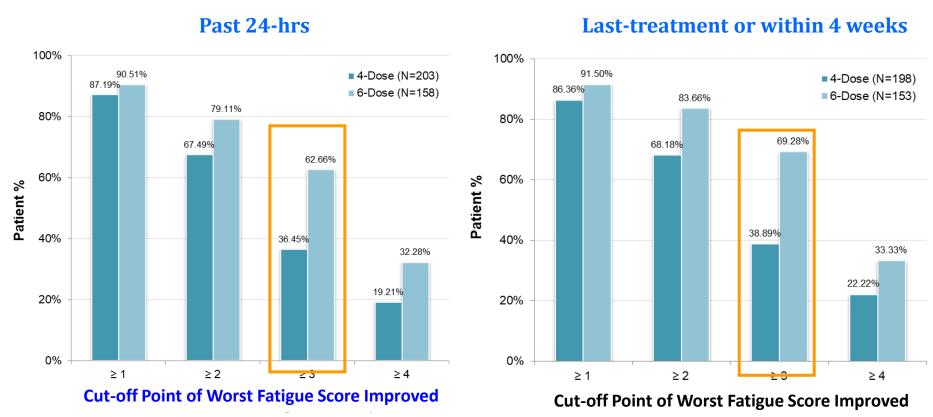
Cut-off Point of Worst Fatigue Score Improved %



Cut-off Point of Worst Fatigue Score Improved %

With 6 doses of PG2 Lyo. Injection treatment, fatigue scores improved from baseline by at least 30% in 76% to 79% of patients

Fatigue Improvement Response Rate (by Score Change)

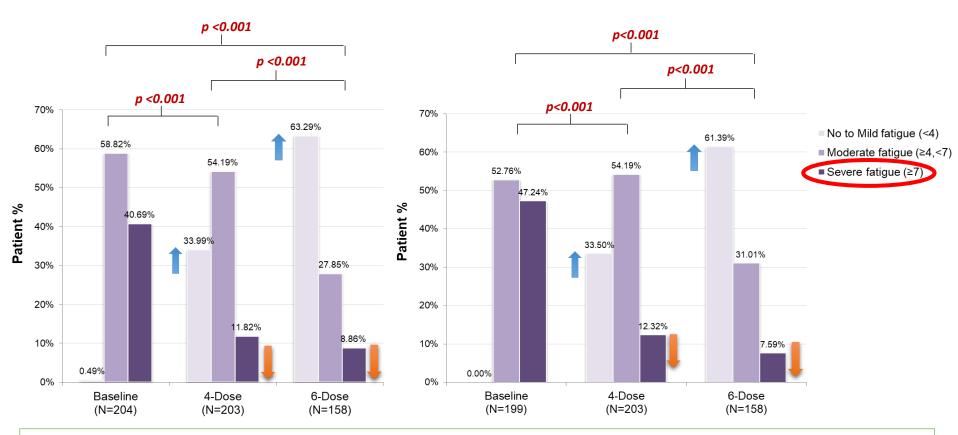


- Fatigue scores improved by at least 3 points from baseline in 63% to 69% of patients with 6 doses of PG2 Lyo. Injection treatment.
- Patients who received 6 doses of PG2 Lyo. Injection experienced greater fatigue improvement compared to those who received only 4 doses.

Categorized of Fatigue Severity



Last-treatment or within 4 weeks



•After 6 doses of PG2 Lyo Injection treatment, more than 60% of patients improved to having no or mild fatigue, and the proportion of patients with severe fatigue decreased by 32% to 40%.

Fatigue Treatment Satisfaction: Patient-Reported Clinical Global ImpressionImprovement (CGI-I)

- 91% of patients who received 6 doses of PG2 Lyo Injection treatment reported an improvement in fatigue.
- Among these patients, 77% reported being "Much improved" or "Very much improved".

CGI-I Score	4-Dos	e (N=202)	6-Dose (N=161)			
Improved (1-3)	176	87.13%	146	90.68%		
Very much improved	15	7.43%	22	13.66% 77% among 56.52% "improved"		
Much improved	88	43.56%	91	56.52% "improved"		
Minimally improved	73	36.14%	33	20.50% patients		
No Improved (4-7)	26	12.87%	15	9.32%		
No change	24	11.88%	11	6.83%		
Minimally worse	2	0.99%	2	1.24%		
Much worse	0	0.00%	2	1.24%		
Very much worse	0	0.00%	0	0.00%		

^{*}chi-square between improved/no Improved and 4-Dose/6-Dose is 0.724.

Fatigue Treatment Satisfaction: Physician Evaluation

After receiving 6 doses of PG2 Lyo Injection treatment, 85% of patients achieved a positive overall outcome as evaluated by physicians, and 92% of patients were recommended to continue with PG2 Lyo Injection treatment.

Overall outcome (N=159)	No. of subject/proportion (%)		
Good	135	84.91%	
Excellent(very good)	13	8.18%	
Good	122	76.73%	
Fair	22	13.84%	
Poor	2	1.26%	
Poor	1	0.63%	
Very poor	1	0.63%	

Recommendations for Continuous Use (N=159)	No. of subject/proportion (%)	
Much	147	92.45%
High	103	64.78%
Moderate	44	27.67%
Not Much	12	7.55%



Fatigue Treatment Satisfaction: Patient Expectations to Continue Use

64.56% of patients were willing to receive to continue PG2 treatment upon patient's consumption of all NIH covered PG2 treatment

Patient Expectations for Continuous Use (N=158)	N	%
Yes	102	64.56%
No	56	35.44%
Patient's willingness	17	10.76%
Change to non-pharmacological CRF therapy	1	0.63%
No fatigue without CRF therapy	1	0.63%
Other reason	37	23.42%

Fatigue Treatment Satisfaction

Patient Reported Fatigue CGI-I score distribution

CGI-I Score	4-Dos	e (N=202)	6-Dos	e (N=161)
Improved (1-3)	176	87.13%	146	90.68%
Very much improved	15	7.43%	22	13.66%
Much improved	88	43.56%	91	56.52%
Minimally improved	73	36.14%	33	20.50%
No Improved (4-7)	26	12.87%	15	9.32%
No change	24	11.88%	11	6.83%
Minimally worse	2	0.99%	2	1.24%
Much worse	0	0.00%	2	1.24%
Very much worse	0	0.00%	0	0.00%

Overall outcome evaluation by physicians

Overall Outcome (N=159)	N	%
Good	135	84.91%
Fair	22	13.84%
Poor	2	1.26%

91% of patients who received 6 doses of PG2 Lyo Injection treatment reported an improvement in fatigue.

85% of patients were assessed by physicians as having achieved a positive overall treatment outcome.

Conclusions

✓ Effective in Fatigue Improvement:

- The efficacy in reducing fatigue is notably higher with 6 doses compared to 4 doses.
- Nearly 60% of patients transitioned to experiencing no to mild fatigue, and the proportion of patients with severe fatigue decreased by 32% to 40% following treatment.

✓ Satisfaction with treatment outcomes:

- 91% of patients receiving 6 doses of PG2 Lyo Injection treatment reported improvement in fatigue.
- A total of 85% of patients experienced a positive overall outcome as evaluated by physicians, with 92% of patients recommended to continue treatment.

PG2®健保給付真實世界驗證(RWE)

✓ Effective in Fatigue Improvement:

- 完成<mark>6劑PG2</mark>治療病人疲憊改善程度明顯高於使用4劑PG2 治療病人。
- · 約6成病人使用6劑PG2後疲憊指數可降到4分以下(VAS<4)。

✓ Satisfaction with treatment outcomes:

- 91%病人完成 6 劑 PG2 治療後覺得疲憊有所改善。
- 85% 醫師對於完成6劑 PG2 治療後的效果感到滿意。
- 92% 醫師在完成6劑 PG2 治療後會建議病人持續PG2治療。

! Early intervention to help patients:

• 此260位以上病人健保給付使用經驗,完成前已死亡分別 在4劑和6劑,各約6%和5%,共約11%(29位病人)

懷特血寶注射劑 (PG2® Injection) 臨床用藥資訊

- 機轉:增強免疫功能及刺激骨髓造血功能
- 適應症: 適用於癌症末期因疾病進展所導致中重度疲勞症狀之改善
- 用法及用量:

成人每次劑量 500 mg,以 2.5-3.5 小時點滴靜脈滴注。每週2-4次,使用2-4週。

• 靜脈滴注溶液製備:

✓ 從500 mL注射用生理食鹽水點滴瓶中 抽取10mL,注入本品藥瓶中,充分混合 至完全溶解後,注射回原500 mL生理食鹽水 點滴瓶中,混合均勻,即完成製備。。

• 安全性:

依據上市後第四期臨床試驗,懷特血寶注射劑常見的不良反應(>2%)包括皮疹(9.21%)、發燒(7.24%)、感覺冷(5.26%)、寒顫(2.63%)及過敏(2.63%)。預防輸注反應可考慮事先給予抗組織胺,及/或以較慢輸住速率,延長輸注時間完成輸注療程



個案分享



46 y/o female left breast cancer, HER2 subtype

2023/03/22 cT2N1M0 2023/11/15 ypT2(m)N1aM0 2024/09/04 rcT0N0M1

Therapeutic regimens

- NACT: 6 Carboplatin + Docetaxel followed by 3 cycles Epirubicin + Cyclophosphamide but failed
- Concurrent Herceptin + Perjeta with above
- TM + ALND with flap reconstruction(2023/11/15)
- Adjuvant: T-DM1(Kadcyla)(2023/12/28-2024/04/06)
 but recurrence
- Salvage: T-Dxd(Enhertu)(2024/10 now)

Cancer Related Fatigue 癌因性疲憊

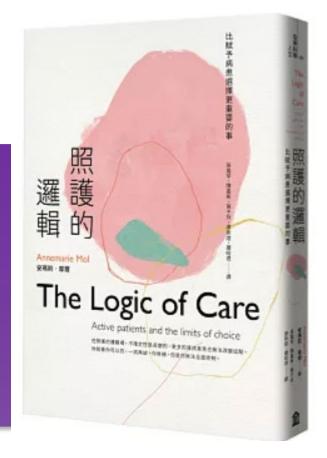
- 自始看中醫(調理)及精神科(眠障)
- 2024/12/09 門診說在家快要累死了,躺著不想 起床(VAS score: 8-9)

• 2025/02/07 6 cycles Enhertu and 有精神抱怨自費

藥燒錢哪! (VAS score: 3)



Cure(治癒) & CARE(照護)



照護的邏輯:比賦予病患選擇更重要的事

The Logic of Care: Active patients and the limits of choice