CBD Case Studies Summary

August 2018

Introduction

Cannabidiol/CBD has recently come to prominence in the media as a treatment for a variety of ailments, ranging from reduction of simple mechanical pain e.g. knocks and bruises, to a cure for cancer. It is a derivative of the hemp/cannabis plant, without the active ingredient (tetrahydrocannabinol/THC) that induces the cannabis "high" *Wray L et al, 2017* (1). There is a plethora of anecdotal "evidence" to be found on the internet, with the suggestion that it can help almost any condition. It is available in a wide range of strengths and qualities, from back street herbalists to medical grade suppliers. *Alex Halperin, The Guardian, May 2018 (2)*

Physioplus+ www.physioplusguisborough.co.uk, a privately owned and run physiotherapy, acupuncture and cranio-sacral clinic (in Guisborough, North Yorkshire, United Kingdom, and Rhodes, Greece) was approached by Cliff Henley, a representative of EVR, an international supplier of medical grade CBD oils www.evrcbd.com initially with the request that we stocked and supplied our patients with EVR cannabidiol products.

The research done and published to date documents positive outcomes in research and treatment of mostly childhood epilepsy, central nervous system problems and psychotic disorders, although much of it is based on self-reporting by users/parents of children with epilepsy e.g. *Devinsky O, et al, 2016* (3), *BE Porter and C Jacobsen, December 2013 (4), Palmieri B et al, 2017(5).*

Latterly, as interest has risen in self-reported improvements and anecdotal evidence, research has progressed to more robust controlled trials *e.g. Devinsky O, Patel AD et al, 2018 (6), Consroe P et al, 1991 (7).* There continue to be interesting studies in animals *eg Reithmeier D et al, 2018 (8)*, research on CBD in mice relating to Huntington's Disease but these cannot yet be extrapolated to the human population.

However, there isn't a broad range of research available in adults for the type of conditions which are seen in the clinic, and as a professional organisation, it was felt inappropriate to offer a product to our patients without having some idea of its efficacy.

It was therefore agreed that single case study trials with a variety of conditions would be done, with a view to establishing the likely efficacy of these CBD products for a wide range of differing patients.

It was felt that having done single case study research and seen any effects from use of CBD products, it would then be possible, if effective, to market CBD products with knowledge of their efficacy to Physioplus+'s patients. It was also agreed that the anonymised case studies would be available to EVR for research and marketing purposes.

Case Study Subjects

The group chosen were:

- Subject 1, female, 34, uncontrolled epilepsy.
- Subject 2, male, 51, uncontrolled epilepsy and post traumatic stress disorder (PTSD).

- Subject 3, female, 56, chronic pain following a car-crash 8 years previously, PTSD.
- Subject 4, male, 32, ankylosing spondylitis, an inflammatory auto immune disease which affects the spine and major joints.
- Subject 5, female, 49, fibromyalgia, (which causes a variety of symptoms, including chronic pain throughout the body and fatigue) and anxiety.
- Subject 6, female, 27, endometriosis (which is where the body creates womb cells outside the womb leading to severe pain and debilitating menstrual periods) and anxiety.

The guardian of a further subject, 7, has so far failed to return data needed for analysis.

- Subject 7, male, 15, Osgood Schlatter disease, which affects the tendon attachment to the bone at the knees, causing pain.

Methodology

Tests carried out pre and post-trial with CBD oil products as described were: McGill Pain Questionnaire 1975 (9), Epilepsy Society UK Seizure Diary 2016 (10), PTSD PCL-C Checklist 1994 (11) and Psych Central Anxiety Screening Test 2018 (12).

Different products were used for each subject to get an idea of whether lower or higher dosages were more effective, and whether topical CBD products were useful in reducing localised pain.

The strengths were allocated randomly to subjects, based on when they agreed to join the trial, and the sample items available.

Summarised Results

Subject 1

Female, 34, uncontrolled epilepsy.

Pre-trial

This subject was experiencing fits almost daily, with no warning that they were coming on. She kept a ‘seizure diary’ (10) for several weeks to establish her fit frequency. She had multiple recent hospital admissions.

Trial

Supplied with an EVR 25% 10 ml airless metered pen and instructed to use it once daily for 6-8 weeks and to take an additional dose if she knew that she was about to have a fit; or get another adult to administer it during fits. She had no specific complaints of pain, so the McGill Pain Questionnaire (7) was not administered.

Subjective reporting was that after two to three weeks of the trial, she was able to tell if she was about to have a fit and stop it from happening by self-administering an additional dose of CBD. It had been difficult for her husband to administer the CBD during fits. She had no fits at all for the last two weeks of the trial.

Post-Trial

Fit frequency decreased by 100%.

At the time of writing this summary and the case studies, this subject is away on holiday and unable to access her 'seizure diary' to provide the exact pre-trial data.

She has bought herself a lower dose of CBD oil from another source to use daily and reserved the last of the doses in the EVR metered pen to use when she feels a fit coming on, successfully preventing all but one episode three weeks after the end of the trial. She will definitely be continuing to use CBD products.

	Pre	Post
PPI	n/a	n/a
NWC	n/a	n/a
PRI	n/a	n/a
Anxiety Screening	n/a	n/a
Change in Pain Levels	n/a	0.00%
Fit Frequency (per week)	TBA	0
Fit Frequency Change %		100%

Subject 2

Male, 51, uncontrolled epilepsy, pain and post-traumatic stress disorder (PTSD).

Pre-trial

Subject was experiencing fits 12-17 times per week, with no warning that they were coming on. He kept a 'seizure diary' (10) for several weeks to establish his fit frequency. He had several hospital admissions prior to the trial.

Self-reported PTSD symptoms were 'severe'.

Moderate pain levels in multiple areas, as a result of falling to the floor and moving uncontrollably, often colliding with furniture etc. during his fits.

PTSD score of 63 on the PTSD Checklist (11).

Pain score 33.93 on the McGill Pain Questionnaire (9).

PPI (Pain Perception Index) at 5, horrible, on the McGill Pain Questionnaire (9).

Trial

Supplied with an EVR 18% 10 ml airless metered pen and instructed to use it once daily for 6-8 weeks, and to take an additional dose if he knew that he was about to have a fit; or get another adult to administer it during fits.

Subjective reporting was that during the trial, there was a decrease in fits to 2-3 per week after the first 2 weeks, and his wife reported that the length and intensity of the fits was reduced. He was still unable to tell when a fit was about to come on, and his wife had been unable to administer doses during fits.

Post-trial

There had been a mean average 82.76% decrease in fit frequency.

PTSD score dropped to 32.

Score still indicative of PTSD, but it had much improved, particularly in the areas of flashbacks *"acting or feeling as if a stressful experience is happening again"*, triggers *"feeling very upset when something reminds you of a stressful situation"*, physical reactions *"heart pounding, trouble breathing, sweating when something reminds you of a stressful situation"*, sleep pattern "*ability to fall asleep and stay asleep"*, and catastrophic thinking "*feeling as if the future will be cut short*".

Pain levels had increased by -42.35% on the McGill Pain Questionnaire (9), which was considerably worse, but reporting was done after he had had a fit, when his pain tends to be worse, as he often injures himself during fits.

PPI (Pain Perception Index) at 4, distressing, on the McGill Pain Questionnaire (9), which was a drop from 5 'horrible' to 4 'distressing', possibly indicating that he was managing his pain better emotionally.

Subject reported that his epilepsy and PTSD symptoms had been enormously improved by the CBD oil.

Three weeks after the end of the trial, he is no longer using CBD products, and his fits and PTSD symptoms have all returned to pre-trial levels. He wants to use a higher dose of CBD metered pen in the future to see if continued use will give him even more symptomatic relief.

	Pre	Post
PPI	6.00	4.00
NWC	16.00	20.00
PRI	33.93	48.30

Anxiety Screening	n/a	n/a
PTSD Screening	63.00	32.00
Change in Pain Levels		-42.35%
Fit Frequency (per week)	12 to 17	2 to 3
Fit Frequency Change %	Mean Average	82.76%

Subject 3

Female, 56, chronic multiple-site pain following a car-crash 8 years previously, PTSD.

Pre-trial

Self-reported PTSD symptoms were 'moderate'.

Pain in multiple areas: constant head, cervical, thoracic and leg pain with cramp, and regular low back pain.

PTSD score of 66 on the PTSD Checklist (11).

Pain score 32.54 on the McGill Pain Questionnaire (9).

PPI score at 2, discomforting, on the McGill Pain Questionnaire (9).

Trial

Supplied with an EVR 22% 10 ml airless metered pen and instructed to use it once daily for 6-8 weeks, and a jar of EVR Premium Hemp Oil CBD Salve to use topically at pain sites.

Subjective reporting was an admission to only using the pen when the pain was bad enough to remind her to do something, rather than taking it daily as instructed. She used the topical salve and reported that it gave good relief of pain when applied.

Post-Trial

PTSD score had dropped to 44.

Score still indicative of PTSD presence, but there was a slight improvement in all areas, and improvement to non-symptomatic in the areas of "*loss of interest in previously enjoyed activities"* and *"feeling distant or cut off from other people"*.

Pain levels had reduced by 15.77% on the McGill Pain Questionnaire (9).

PPI remained the same, at 3 (discomforting), possibly because of bilateral shoulder pain, which had not been present at the beginning of the trial.

Subject reported that nightmares were episodic rather than every night but increased when stress levels were higher. "*Loss of interest in previously enjoyed activities"* failed to be an issue during the trial and had not returned by 3 weeks post trial, which had improved her perceived quality of life.

Previous head pain had gone completely, previous right cervical pain was now occasional instead of continuous, low back pain was rare, leg pain had gone.

Regular cramp still present, thoracic pain unaltered and developed bilateral shoulder pain which hadn't been present previously. This was attributed to a huge increase in driving. The salve was effective in reducing this by about 75% when applied.

The subject reports that she felt that the products supplied to her for the trial had been partially effective, and she would use them again, and more regularly now that she had been reminded to use them daily, to see if all of her symptoms could be further improved.

	Pre	Post
PPI	3.00	3.00
NWC	15.00	13.00
PRI	32.54	27.41
Anxiety Screening	n/a	n/a
PTSD Screening	66.00	44.00
Change in Pain Levels		15.77%
Fit Frequency (per week)	n/a	n/a
Fit Frequency Change %	n/a	n/a

Subject 4

Male, 32, ankylosing spondylitis. Daily low back, thoracic and intermittent hip and knee pain. Morning stiffness.

Pre-trial

Pain score 44.71 on the McGill Pain Questionnaire (7).

PPI at 3, discomforting, on the McGill Pain Questionnaire (7).

Trial

Supplied with a bottle of 10% (1000 ml) Cherry CBD oil, with instructions to take it daily and a jar of EVR Premium Hemp Oil CBD Salve to use topically at pain sites.

Post-Trial

Pain levels had reduced to 50.46% of previous level on the McGill Pain Questionnaire (9).

PPI at 2, mild, on the McGill Pain Questionnaire (9), an improvement from the previous 3, discomforting.

Subject reported that he didn't feel that the CBD product used had been helpful, either topically applied or orally administered. His wife had applied the salve to the whole of his back on several occasions without a noticeable decrease in his pain levels. (His wife however reported using it for her own persistent thumb and low back pain with excellent results, although she wasn't part of this trial.)

The subject attributes his improved pain scores to a new programme of gym exercises for four days every week beginning 3 weeks into the trial. He reported that gym days were good days and continue to be so after the end of the trial. Based on his experience, he would not buy the products as supplied for the trial in future.

	Pre	Post
PPI	3.00	1.00
NWC	20.00	12.00
PRI	44.71	22.15
Anxiety Screening	n/a	n/a
Change in Pain Levels		50.46%
Fit Frequency (per week)	n/a	n/a
Fit Frequency Change %	n/a	n/a

Subject 5

Female, 49, fibromyalgia, anxiety/stress. This subject also has insulin dependent diabetes mellitus, and osteoporosis affecting her pelvis and both hip joints.

Pre-trial

Pain in multiple areas: severe pain in both hips, longstanding bilateral breast pain and 'lumpiness' (20 years+), irritable bowel syndrome, nausea/stomach churning, fatigue and difficulty concentrating.

Self-reported anxiety was high.

Pain score 162.35 on the McGill Pain Questionnaire (9).

PPI was at 5, horrible, on the McGill Pain Questionnaire (9).

Anxiety score 41, severe anxiety disorder, on the Psych Central Anxiety Test (11).

Trial

Supplied with an EVR 18% 10ml airless metered pen, with instructions to take it daily and a jar of EVR Premium Hemp Oil CBD Salve to use topically at pain sites.

Subjective reporting during the trial was that nothing seemed much different.

Post-Trial

Pain levels had reduced to 53.71% of previous level on the McGill Pain Questionnaire (9).

PPI at 3, discomforting, on the McGill Pain Questionnaire (9).

Anxiety score 17, now no longer within an anxiety disorder range, on the Psych Central Anxiety Test (11).

Subject reported that by the end of the trial, her breast pain and 'lumpiness' had completely gone, her irritable bowel syndrome and nausea/stomach churning had gone, and her stress levels seemed a little better. Her hip pain had not altered and had not been helped by topical application of the CBD salve.

	Pre	Post
PPI	5.00	3.00
NWC	56.00	31.00
PRI	162.35	75.15
Anxiety Screening	41.00	22.00
Change in Pain Levels		53.71%
Fit Frequency (per week)	n/a	n/a
Fit Frequency Change %	n/a	n/a

Subject 6

Female, 27, endometriosis and anxiety.

Pre-trial

Pain in abdomen, so severe during periods that she previously had to take several days off work on each occasion, nausea.

Self-reported anxiety level moderate to high.

Pain score 75.82 on the McGill Pain Questionnaire (9).

PPI was at 4, distressing, on the McGill Pain Questionnaire (9).

Anxiety score 27, moderate anxiety disorder, on the Psych Central Anxiety Test (11).

Trial

Supplied with a bottle of 10% (1000 ml) Cherry CBD oil, with instructions to take it daily.

Post-Trial

Pain levels had reduced to 34.75% of previous level on the McGill Pain Questionnaire (9).

PPI at 3, discomforting, on the McGill Pain Questionnaire (9).

Anxiety score 16, now no longer within an anxiety disorder range, on the Psych Central Anxiety Test (11).

Subject reported that pain was much improved and manageable. Can function now. Last bad episode where she couldn't work was January/February 2018, when she was unable to leave home or go to work because of endometriosis pain. The trial of CBD oil came part way through an on-going course of cranio-sacral therapy for her endometriosis pain, and she was unable to tell if the CBD oil alone had been the thing that improved her pain, or the combination with cranio-sacral therapy. However, she felt that her anxiety had definitely been improved by the CBD oil.

	Pre	Post
PPI	3.00	2.00
NWC	34.00	23.00
PRI	75.82	49.47
Anxiety Screening	27.00	16.00
Change in Pain Levels		34.75%
Fit Frequency (per week)	n/a	n/a
Fit Frequency Change %	n/a	n/a

Conclusions

The results of the trial suggest the efficacy of oral CBD oil products in the treatment of uncontrolled adult epilepsy, management of PTSD and anxiety symptoms, and management of chronic pain.

It is possible that the higher dosage of CBD is more effective for uncontrolled adult epilepsy.

It is not clear from the trial whether the decrease in pain symptoms for ankylosing spondylitis and endometriosis were due to the CBD products used in combination with other activities/therapy or down to the use of CBD products or the other activities/therapy alone. Further research into this is suggested.

The improvements in the irritable bowel/abdominal/nausea symptoms of subject 5 were unexpected but could possibly be explained by the research of *De Petrocellis L et al, 2012* (13).

This author feels that the results from these case studies for use of the cannabidiol salve can only be considered as anecdotal, and further research via a controlled/placebo trial is suggested.

Author Notes

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These Case Studies are a result of being asked to provide CBD products for sale in the practices. This was not possible without knowing the possible benefits or side effects. Since there was little evidence other than anecdotal, or in children, or using products containing THC, the case studies were the only way to provide the information necessary to consider offering the products for eventual sale.

The samples used were provided free on request from EVR, with no expectation of reward, sales or endorsement.

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The individual anonymised case studies are available on request from jane@physioplusguisborough.co.uk

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