THE SAGOL CENTER FOR HYPERBARIC MEDICINE AND RESEARCH

Neurocognitive Rehabilitation Unit

מרכז רפואי אסף הרופא
ASSAF HAROFEH MEDICAL CENTER

JOINT COMMISSION INTERNATIONAL
QUALITY APPROVAL

- ✓ **Currently the largest hyperbaric facility in Israel and one of the biggest worldwide**
- ✓ **Treating more than 120 patients a day using two highly modern, multiplace chambers**
- ✓ **A winning combination between biological intervention and interdisciplinary rehabilitation**
- ✓ **HBOT improves neurological and cognitive functions and improves the quality of life in post stroke and traumatic brain injury patients**

About Assaf Harofeh Medical Center

Assaf Harofeh Medical Center is the fourth largest government hospital in Israel. It is situated in the center of Israel, 15 minutes from Tel Aviv and 5 minutes from the Ben Gurion International Airport. The outpatient clinics, emergency room, inpatient departments and maternity wards are supported by dozens of departments, medical institutes, clinics and laboratories including all the sub-specialties.

The hospital prides itself on its commitment to provide the best personal care, and diagnosis and medical treatment of the highest possible standards. The staff dedicated to this commitment includes 3,400 doctors, researchers, accompanying medical professionals, nursing staff, and management, working together to provide professional and courteous service to patients from all over the world who arrive at the Medical Center.

The Sagol Center for Hyperbaric Medicine and Research

The Hyperbaric Medical Center in Assaf Harofeh was established in 1997. The Center is currently the largest hyperbaric facility in Israel and one of the biggest worldwide.

The Hyperbaric Oxygen Therapy (HBOT) used as the standard of care for different pathologies (for example: burns, radiation injuries and non-healing ischemic ulcers). In addition to standard of care, it was recently proved that HBOT can be effective for different types of brain injuries.

The Sagol Center for Hyperbaric Medicine and Research currently treats more than 120 patients a day using two highly modern, multiplace chambers.

The Neurocognitive Rehabilitation Unit

During the last 6 years there is an ongoing research program at the Sagol Center aiming to evaluate the neurological beneficial effects of HBOT for different brain pathologies. The first published clinical study (see references below), has proven that HBOT improves neurological and cognitive functions and quality of life in post stroke and traumatic brain injury patients. The beneficial neuroplasticity effect of HBOT in the metabolic dysfunction brain areas can be induced even months to years after acute insult. The metabolic dysfunction areas in the brain can be visualized by the combination of anatomical (MRI) with metabolic imaging (SPECT/perfusion MRI+DTI).

Current research conclusions:

- **HBOT can induce neuroplasticity in brain regions with metabolic dysfunction demonstrated by metabolic/anatomical mismatch in brain imaging**
- **Neuroplasticity can be induced by HBOT years after the acute insult**
- **The most significant improvement is seen in patients with a high discrepancy between metabolic dysfunction to the anatomic damage (non-active brain regions without evidence of significant necrosis)**
- **Clinical improvement correlates with activated brain regions**

Accordingly, all patients who are candidates for HBOT undergo an initial evaluation that includes, in addition to neurocognitive testing, metabolic and anatomic brain imaging.

The Neurological Rehabilitation Unit is a division of the Sagol Center, integrating several rehabilitation disciplines in one location (neuropsychology, physiotherapy, speech-therapy). The biological intervention (HBOT) together with intensive multidisciplinary, intensive rehabilitation introduces a new promising venue for achieving a fast and potent recovery process, enabling the patients to regain their normal lives.

Interdisciplinary Rehabilitation

Patients treated in the Unit initially undergo a baseline interdisciplinary assessment process, evaluating their motor, cognitive, emotional and speech impairments. Based on the results, a specific rehabilitation program is designed for each patient that includes the following, in addition to the HBOT:

1. Individual treatments - "1 on 1" neurocognitive rehabilitation sessions or psychotherapy (if needed).
2. Cognitive groups - neurocognitive rehabilitation sessions held in a social context.
3. Peer groups - Allowing emotional processing of rehabilitation challenges and rehabilitation of inter-personal functioning.
4. Computer lab - enabling independent computer based cognitive training.
5. Physiotherapy - personal physiotherapy sessions.
6. Gym - independent physical training under physiotherapist supervision.
7. Speech Therapy - for patients with communication impairments. Administered by a speech therapist.
8. Dietician – for patients necessitating a nutritional consultant.
9. Acupuncture.

A Winning Combination between Biological Intervention and Interdisciplinary Rehabilitation

All treatments take place in the new modern facility of the Sagol Center for Hyperbaric Medicine and Research in Assaf Harofeh Medical Center, Israel. The rehabilitation interventions are synchronized with the HBOT sessions.

It is clear that the combination of biological treatment, enabling regeneration of the injured brain tissue, together with intensive interdisciplinary rehabilitation for regaining functional use of the repairing tissue, is the most cost and time effective way for bringing the patients back to their normal lives.

Treatment Duration

A rehabilitation cycle lasts 3 months and includes 60 HBOT daily sessions, 5 days per week. Accordingly, rehabilitation is short and intensive requiring highly motivated patients. The Unit is suitable for adult patients suffering from post concussion syndrome, stroke, or anoxic brain damage.

The Staff

Dr. Shai Efrati (M.D.) - Director of the "Sagol Center for Hyperbaric Medicine and Research". Specialist in Internal Medicine, Nephrology and Hyperbaric Medicine. Dr. Efrati is also the Head of Research & Development Unit of Assaf Harofeh Medical Center.

Gil Suzin (M.A.) - Specialist in Neuropsychologist and Rehabilitation Psychology. Director of the Neurological Rehabilitation Unit in the "Sagol Center for Hyperbaric Medicine and Research", Assaf Harofeh Medical Center.

Janet Berman (M.Sc.) - Director of the Physiotherapy Section in the "Sagol Center for Hyperbaric Medicine and Research", Assaf Harofeh Medical Center. Has more than 40 years of expertise in the field of neurological rehabilitation.

Malka Daniel Kartovsky (M.A.) - Chief Nurse of the Neurological Unit in the "Sagol Center for Hyperbaric Medicine and Research". A certified nurse with a Masters degree in gerontology.

References

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2. *Boussi-Gross R, Golan H, Volkov O, Bechor Y, Hoofien D,,,Efrati S. (2014) Improvement of Memory Impairments in Poststroke Patients by Hyperbaric Oxygen Therapy. Neuropsychology.*
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5. *Efrati S, Ben-Jacob E (2014) How and why hyperbaric oxygen therapy can bring new hope for children suffering from cerebral palsy--an editorial perspective. Undersea & Hyperbaric Medicine: Journal of the Undersea and Hyperbaric Medical Society, Inc 41: 71-76.*