Oxygen therapy is valuable, sometimes

Though it may not help patients live to 150 like Michael Jackson once hoped, hyperbaric oxygen therapy is a valuable treatment for a range of diseases

BY **JANE E. BRODY**
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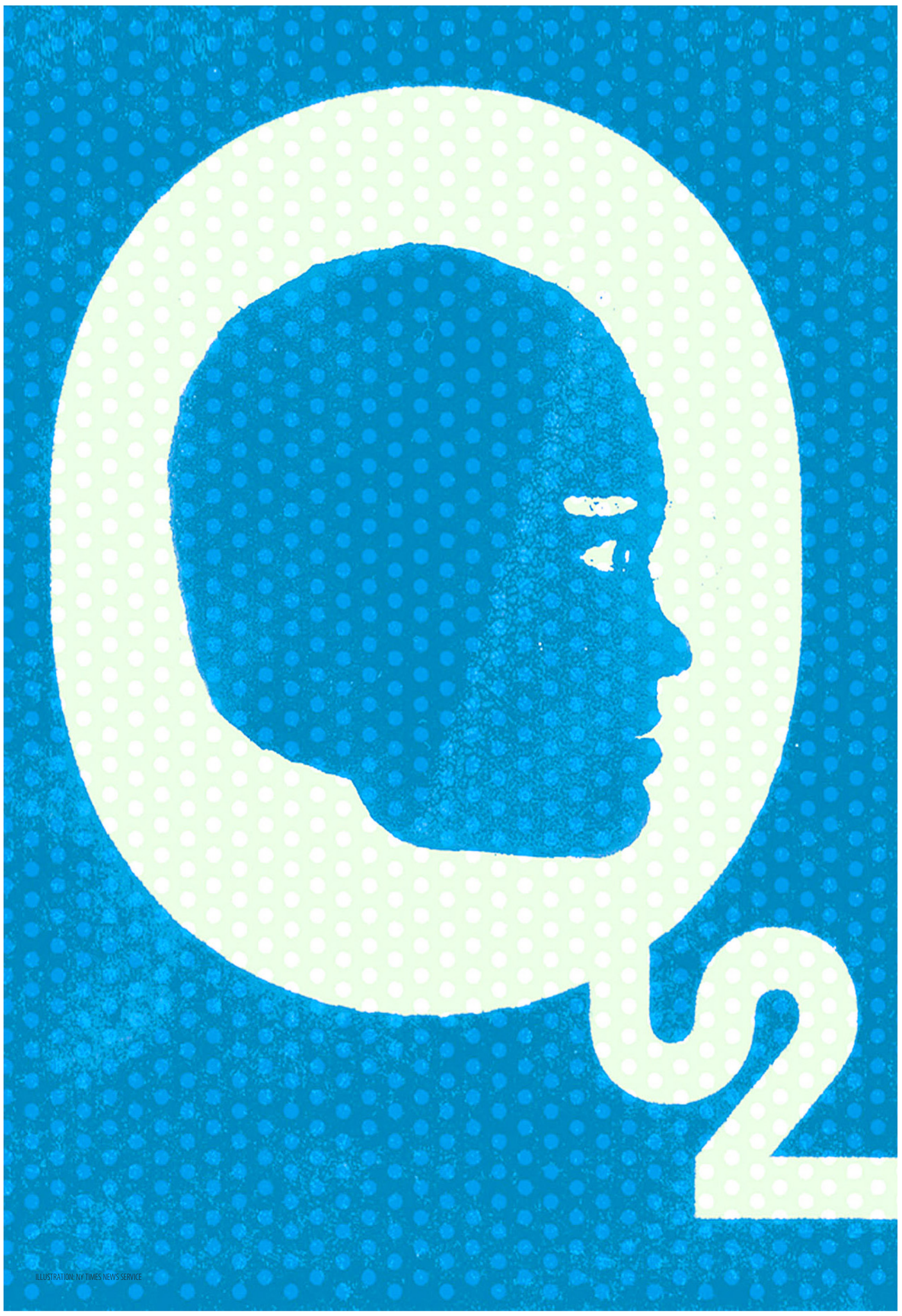

ILLUSTRATION: NY TIMES NEWS SERVICE

Hyperbaric oxygen therapy was long called a treatment in search of diseases. But in recent years, laboratory and clinical studies have found more than a dozen serious diseases for which it is considered a valuable — and sometimes lifesaving — treatment.

Although the administration of pure oxygen in a high-pressure chamber has been around as a therapy for more than 300 years, it is only now beginning to reach its potential, according to a report in the November issue of the journal *Emergency Medicine*.

At the same time, hyperbaric oxygen therapy has joined the ranks of unproven remedies for many conditions, especially incurable ones like cerebral palsy and autism. The use of the therapy in these situations often borders on quackery that exploits desperate patients and parents. One family I know spent US$40,000 in a futile attempt to reverse their child's cerebral palsy; another spent more than that and even bought a home hyperbaric unit to treat their child's autism.

THE CREDIBILITY FACTOR

The Undersea and Hyperbaric Medical Society, the professional organization in this field, recognizes 13 conditions for which it is legitimate to place patients in high-pressure chambers that force pure oxygen into their blood and tissues. Eleven of those conditions have been approved by Medicare for reimbursement, indicating that solid evidence supports these uses of hyperbaric oxygen.

The list includes decompression sickness ("the bends"), necrotizing fasciitis (flesh-eating disease), carbon monoxide poisoning, gas gangrene, the bone infection osteomyelitis, nonhealing wounds and delayed radiation injury to bone and soft tissue.

But nowhere in the list are cerebral palsy, autism, multiple sclerosis, stroke, macular degeneration, spinal cord injury, sports injuries, heart attack, post-polio syndrome, Lyme disease, migraine, cirrhosis, myasthenia gravis, fibromyalgia or chronic fatigue syndrome — among the dozens of conditions that independent clinics claim to treat with hyperbaric oxygen. Not to mention the claims of celebrities like Michael Jackson, who used it in the hope that it will keep him alive to 150, and Keanu Reeves, who used it for insomnia.

"Credibility is a huge problem," said Richard Clarke, director of the Baromedical Research Foundation, which sponsors scientifically sound research. "We are all tarred by the same brush.

"Although hyperbaric oxygen therapy has been suggested as beneficial in several other conditions, unfortunately, clinically valid evidence is virtually nonexistent," he said. "This is relatively expensive and time-consuming therapy, and it makes sense to ask whether it is cost-effective and whether the benefits are long-lasting."

Even for conditions approved by Medicare, supporting evidence is often contradictory. "A persistent criticism of hyperbaric medicine regards the lack of large-scale, multicenter, randomized studies for several of the primary indications," noted Chris Maples and Moss Mendelson of Eastern Virginia Medical School in Norfolk, in the Emergency Medicine report. "Data are conflicting, particularly on carbon monoxide poisoning, crush injuries and some soft tissue infections. Some trials demonstrate benefit while others show no difference."

PROBLEMS AND RISKS

One problem in conducting good studies is the difficulty of randomly assigning patients into treatment and control groups in a way that "blinds" them to the group they are in, Charles Graffeo, a specialist in hyperbaric medicine at the Eastern Virginia Medical School, said in an interview. Another problem is finding enough patients with the same condition, which is crucial in gathering statistically significant data.

Graffeo said there was "a good theoretical basis and some promising evidence that hyperbaric oxygen therapy could help treat clots on the retina, acute frostbite, recluse spider bites and thermal burns."

"But there are just not enough scientific studies," he said. "Conducting controlled clinical trials of hyperbaric oxygen is a bit more challenging than testing drugs."

He cautioned patients to steer clear of independent hyperbaric centers owned by a single doctor or small medical group that is not affiliated with a major hospital or medical school. Commenting on claims commonly made by such clinics, he said: "No legitimate organization would condone treating cerebral palsy with hyperbaric oxygen therapy. I haven't seen anything that is even potentially promising to support such a use. If I had a CP child, I wouldn't even consider it."

Furthermore, the therapy is not without risks, though most are mild and usually short-lived, and there has been no documented fatality in more than 75 years of use in North America. The risks include ear and sinus pain, low blood sugar, nearsightedness that can last for weeks, and anxiety attacks resulting from confinement in the chamber. Also, the therapy is clearly dangerous for some patients, including those with a collapsed lung and those receiving chemotherapy with cisplatinum or adriamycin. The therapy may also be hazardous for pregnant women and people with poorly controlled asthma or active cancer, among others.

ESTABLISHED BENEFITS

Hyperbaric oxygen can be life-saving for patients with the bends, like divers who have surfaced too quickly. For those suffering from severe carbon monoxide poisoning, the most rigorous study so far found that three hyperbaric treatments decreased cognitive damage later. Traumas like crush injuries and thermal burns that deprive tissues of adequate oxygen also benefit from high-oxygen therapy, as do life-threatening infections called necrotizing fasciitis, if the condition is treated in its early stages, the experts in Virginia reported. The therapy may also be useful for sepsis, a potentially life-threatening bacterial infection in the blood and tissues.

Graffeo said the therapy was useful in treating diabetic foot ulcers and bone infections. It is beneficial for patients whose tissues were damaged by radiation therapy — cancer patients, for example, who can develop oxygen-deficient wounds that do not heal well. Hyperbaric oxygen promotes the release of growth hormone and helps to form blood vessels in irradiated tissue, he said.

A study published last September in the *International Journal of Radiation Oncology, Biology, Physics* found hyperbaric oxygen helpful for patients with radiation proctitis, which can cause bleeding, rectal ulcers and loss of bowel control. Though the costly treatment can involve as many as 40 two-hour sessions, "the net effect is reversal of the problem in the majority of patients, which in the end is cost-saving and greatly improves quality of life," said Clarke, whose foundation sponsored the study.

Oxygen therapy is being tested in patients with new diagnoses of head or neck cancer to increase the tumor's sensitivity to radiation treatments, Clarke said. Future studies will test benefits to patients with cancers of the larynx, skin and gynecological organs.

"The most important question to answer, in addition to cost-effectiveness," he said, "is whether the therapeutic benefit lasts and clearly improves patients' quality of life."

[FOOD]

Should you wash organic produce?

Pesticide-laden, organic or even pre-washed, it's not just the 'dirty dozen' that need a good scrub before being consumed

BY **LUCY SIEGLE**
THE GUARDIAN, LONDON

Life is too short to stuff a mushroom, as Shirley Conran once said, but what about scrubbing it free of pesticides? To gauge how much you need to bathe fresh produce, first consider whether it's one of the Dirty Dozen — a list of pesticide-infused shame compiled last year by the Environmental Working group in Washington (available from www.foodnews.org). Based on analysis of more than 100,000 US government pesticide results, it named and shamed peaches, apples and bell peppers as the top three fruit and vegetables to hold the highest levels of pesticide residue.

But don't let this instill a false sense of security — health professionals are adamant that all fresh produce should be cleaned to remove potential pathogens.

This includes organic. In fact, critics of organic produce are at pains to point out that the spinach in the 2007 outbreak of Escherichia coli (E. coli) in Californian was grown using "organic methods." Perhaps more significantly, it was also processed using industrial methods. Even produce sold as "pre-washed" needs to be washed.

DISHING THE DIRT

Again, increasingly, this includes organic pre-washed. Organic produce used to wear clods of dirt as a badge of honor, symbolizing its relatively simple and wholesome, traceable journey from plot to plate. This is still the case at farmers' markets, with more local produce, and often with box schemes — and to be fair this is more than cosmetic. A bit of soil also helps to preserve the product as it gets to market.

The peach is not the only "dirty" fruit. PHOTO: NY TIMES NEWS SERVICE

But that depends where your market is. It would be bad economics and against food-hygiene rules to import a large amount of earth with your runner beans. As organic produce has been annexed by big commercial enterprises, it is increasingly scrubbed up in huge pack houses that bring together produce from large numbers of farms for a dousing.

CHLORINE DRESSING ANYONE?

A day in the life of a carrot includes an initial wash, a polish with water to remove grit and a spot of hydro-chilling with cold water before being inspected by mechanical optical graders, where it might not make the grade in any case. More energy often goes into cleaning and packaging fresh produce than goes into actually growing it. This is particularly true of cut greens, such as lettuce, which are washed in ice baths to remove debris, followed by the routine use of chlorine to sanitize bagged salads.

However, rather than providing extra security, pack-house innovations (including chlorine) make me want to empty leafy greens into the sink as soon as I buy them, scrub potatoes and peel carrots. In fact, it actually makes me want to steer clear of pre-washed or pre-bagged at all. I would even use a pH-balanced fruit and vegetable wash that lifts off and kills pathogens on fresh-cut produce. I cannot promise that I will never again moan about scrubbing potatoes, but I'd rather keep veg prep as a kitchen sink drama.