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In 2010, the Hyperbaric Centre of Ravenna started the blog experience: www.iperbaricoravennablog.it, for sharing requests, questions and stories of patients. The basic concept is that: often the solution to the problem of one could be the solution to the problems of others. In 2012 it was born Ossigenatevi! a tool for reading and preserving the most read articles on the blog. After 5 years Ossigenatevi! updated itself. We designed a modern graphic look and improved the variety of topics. In this issue, you can read articles on updating and innovation about our care paths, our patients’ stories, notes and experiences about courses and conferences to which our doctors and nurses attended. Who will be the patient of this number? Discover it on the last page.

“My first steps into the world” a project of the municipality of Ravenna

During the spring of 2018, the Municipality of Ravenna created a project to celebrate the arrival of the newborn babies of the Ravenna Municipality, with an initiative dedicated to our youngest citizens and their families entitled: “My first steps into the world”.

The project originates from the will to offer the families a real endorsement, as a new birth brings about significant changes, often with expenses that considerably affect the family budget.

Therefore, our municipality asked trade associations and companies to contribute to this project.

Together with many companies and commercial enterprises of our territory, the Hyperbaric Centre of Ravenna joined with enthusiasm. The project materialized and all the details were published on the website of the Ravenna Hyperbaric Centre.

At the Hyperbaric Centre of Ravenna, we made a special offer for the new mums on the Dr Vodder’s Manual Lymph Drainage, with 10% discount on the package.

What is lymph drainage?

The Vodder’s lymph drainage is a massage therapy made by slow, rhythmic and harmonic movements that are meant to recreate the water balance in the tissues, by pushing the lymph in the lymphatic stations thus avoiding the accumulation of liquids and toxins in the tissues. It is a very relaxing technique that also has another important goal: that is allowing the renewal of the interstitial fluid. This allows the cells to renew themselves and to live longer, thus facilitating the tissues oxygenation and, as a consequence, to improve their aspect.

One feature of the lymph drainage is that it must always be performed without oil or any other fat substance. It is a dry massage that at most needs some talcum powder to facilitate the flow of the hands on the skin.

What are the effects of lymph drainage?

- Vegetative effect (stress reliever): the lymph drainage massage has a positive effect on the vagus nerve that forms the greatest part of the Parasympathetic nervous system. This system activates when we are in a calm and relaxed state thus giving rise to many beneficial effects: it reduces the heart rate, favours digestion and muscle relaxation, increases the bowel peristalsis and favours the “recovery” functions such as the immune one.
• Analgesic effect (against pain): with a correct execution of the lymph drainage the inhibitory cells that reduce pain are excited.

• Immunological effect: it can be presumed that the lymph drainage acts on the immune system as, due to the manual moving of the lymphatic fluid, the disease agents are led as soon as possible to the lymph nodes, where they are made inoffensive.

• Drainage effect: the lymphatic circulation’s task is to keep the catabolites concentration low in our tissues. If this function is not performed in an exhaustive way, our body brings other fluids back on site in order to dilute dross and maintain their concentration level acceptable. During pregnancy an accumulation of excess fluids is physiological, therefore undertaking a complete cycle of massages can be particularly recommended after birth.

As it is a slow and relaxing massage, it is recommended in particular for the new mothers who want to pamper themselves and, why not, also together with their kid.
**PFO, what are the risks of diving?**

Good morning, in order to check if the PFO is present, I undertook an echocardiogram that gave an ambiguous result.

I followed with other checks by undertaking another colour Doppler echocardiography which resulted in: "basic slight right-to-left microbubbles shunt (<5 microbubbles) that increases in the late stages (moderate level, 5-10 microbubbles). After Valsalva, the shunt is moderate. There is no-aneurysm of the interatrial septum, nor Chiari network. In conclusion: the presence of PFO with basal slight moderate degree shunt and moderate after Valsalva.

Doctors weren’t able to tell me if this characteristic is compatible with diving. I contacted the DAN doctors that told me to follow the recommendations for a Low Bubble diving profile, according to the Swiss Underwater and Hyperbaric Medical Society (SUHMS).

I would like to know how to go on with the investigations to know the potential and real risks. I have been performing recreational diving for 4 years.

Thanks,
Elena

**Dr Paolo Della Torre answers**

Dear Elena,

After detecting the PFO presence, many divers are not sure whether to go on with safe diving, due to the lacking or generic indication in this field.

This is due to the fact that in the in the great majority of cases, the same exams and the procedures through which they are made, are meant to detect the simple defect.

Without considering its haemodynamic significance and without excluding other potential concomitant right-to-left shunts, the pure PFO diagnosis is not sufficient and it can’t provide indications regarding the risks and limitations which that specific defect may cause in diving.

In your case, the diagnosis was made by a colour Doppler echocardiography (transthoracic? Transoesophageal?) that showed the passage of 5 bubbles (slight passage) at rest and after moderate Valsalva (how many sessions?).

I remind you that also the transoesophageal exam has the best specificity to verify the presence of the PFO, but it is less specific to define how it is hemodynamically significant.

I understand that DAN recommended you to prudently adopt the recommendations of the Swiss Underwater and Hyperbaric Medical Society (SUHMS), by maintaining a Low Bubble diving profile (fewer bubbles are formed, fewer bubbles can pass through).

Nevertheless, I think that in case of a suspected presence of right-to-left shunt (PFO is one of the potential shunts), to meet the need of diver’s risk, the indications must derive from an evaluation of the results through a series of specific tests and exams.

This is the reason why at the Ravenna Hyperbaric Centre we propose a diagnostic pathway which lasts a whole day that includes:

- Transcranial Doppler with contrast medium in a salt solution, at rest and after Valsalva.
- Arterial blood gas and Transcutaneous oximetry before and after the effort and oxygen breathing.
- Diving visit, after which recommendations and eventual limitations to diving can be defined.

This is what you should have done or you can do to have more specific indications.

Best regards,
Paolo Della Torre

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**Dott. Paolo Della Torre**

Degree in Medicine and Surgery at the University of Milan and specialized in Medicine of Swimming and Diving Activities at the University “G. D’Annunzio” of Chieti.

Subscribed to the Medical Council of Rome, Number 42375.
Spondylodiscitis and hyperbaric chamber: Ilaria asks for some information on the modes of access

Dear Sirs,

I would like to receive more detailed information on the way to access the hyperbaric chamber and to receive a medical consultation as regards the spondylodiscitis.

My name is Ilaria, I’m from Rome and I’m writing to you on behalf of my 67-year-old mother. During the first days of December, due to severe pain to the spine, she underwent a magnetic resonance and she was diagnosed with an L3-L4 spondylodiscitis.

She was hospitalized for nearly 4 months. During that time she was administered the first cycle of antibiotics intravenously. She continued the treatment orally for 40 days more at a rehabilitation facility. After a successive consultation at the hospital with the orthopaedic and a control magnetic resonance, she was again diagnosed with spondylodiscitis and recommended to resume the antibiotic treatment orally.

I would really like to resolve this situation in an exhaustive and definitive way, that’s why I kindly ask you if it is possible to come to your centre.

Waiting for your reply.
Thank you in advance.

Best regards,
Ilaria
Takayasu’s arteritis: is it possible to continue to dive?

Dear Doctors,

I’m writing to you because last year I was diagnosed with the Takayasu’s arteritis and I have been undergoing a pharmacological therapy with cortisone and other drugs. I asked my rheumatologist if I can dive again, but he told me: “You’d better not”. However, he didn’t give me a precise explanation. At the moment, my left subclavian is closed at the shoulders height. I am aware that mine is a peculiar situation and I should show you my medical chart. As soon as I repeat the PET, I want to book a visit, but I would like to know, in broad outlines, if you have ever had patients affected by vasculitis of the large vessels who started to dive again.

Thank you,
Gloria

Dr Paolo Della Torre answers

Dear Gloria,

Takayasu’s arteritis is a vasculitis, which is an inflammatory disease of the arterial wall that affects the pulmonary arteries, the aorta and its branches and especially the arteries of the arms and the neck.

The left stenosis of the left subclavian artery you mentioned is a consequence of the presence of inflammatory infiltrate that caused the artery thickening and the subsequent narrowing of the blood vessel until its obstruction. It is a rare disease that mainly affects women, especially in Eastern countries. That’s the reason why I don’t know any other divers affected by this disease.

For a suitability test to diving, in this case, you need to search for absolute or relative potential contraindications. First, you need to consider the inflammation phase, the good pharmacological compensation, the tolerance and the potential side effects of the corticosteroids and chemotherapeutics you are taking.

Furthermore, the focal symptoms that reflect the hypo-perfusion of an affected organ or a limb need to be evaluated. The involvement of the vertebral and carotidal arteries that might cause a decrease in the cerebral blood flow with dizziness, syncope, orthostatic hypotension, migraine, transient visual disturbances, transitory ischaemic attacks or strokes is to be excluded.

In your specific case, in particular, the left stenosis of the left subclavian artery, close to the origin of the vertebral artery, might cause neurological ischaemic disorders or syncope when the arm is used (Subclavian steal syndrome); this together with a mechanism of retrograde flow through the vertebral artery in order to supply the subclavian artery in the distal portion of the stenosis. This is the reason why it might be useful to consult a physiatrist.

It will also be necessary to exclude the presence of more general symptoms, such as arterial hypertension due to the involvement of the renal arteries, ischaemic retinopathy and aortic valve insufficiency that often appears to be one of the displays of the Takayasu’s arteritis.

As you can see, there are many aspects to be considered before deciding if you can’t dive anymore. It is crucial and essential to optimize the therapy, in order to limit the symptoms and the arterial progression, with scarce side effects.

Best regards,
Paolo Della Torre
Dear Doctors,

This is the CAT scan diagnosis: As a side-effect, at the left femoral neck level, there is evidence of a morpho-structural alteration of nearly 2.2 x 1.5 cm, characterized by mainly central osteolytic appearance and serpiginous sclerotic margins compatible at first with bone stroke outcome”.

Actually, I was prescribed with the CAT scan to carry out some checks on the gallstones. I would like to know what the diagnosis means and what can I do. The symptoms are not quite evident, almost imperceptible, although sometimes I feel a slight pain the left hip. However, the pain is never particularly intense.

Best regards

Dr Claudia Rastelli answers
Dear Giuseppe,

Your CAT scan shows the presence of bone infarction (osteonecrosis). I kindly recommend you to undergo a magnetic resonance in order to evaluate the extension and the state of your disease.

Once carried out this exam, it is possible to undergo a hyperbaric medical examination to understand if hyperbaric therapy is suitable for you.

The fact that you don’t perceive a lot of pain nor functional deficits makes me hopeful that you are affected by an initial stage of osteonecrosis. I kindly recommend you not to make extra efforts and to use stretchers for walking to avoid a worsening of the bone condition.

In order to undergo a medical examination and for further information I kindly invite you to contact us at the +39 0544 500152.

Best regards,

Dr Claudia Rastelli

The story of Alessandro: a brave child

Today we want to tell you the story of Alessandro, a 6-year-old child, who at the beginning of summer cut the right hand with a pair of field scissors while helping his grandfather in the vegetable garden.

After receiving the first aid at the Rovigo emergency room, a doctor recommended him to attend our centre to undergo hyperbaric oxygen therapy (HBOT).

His parents promptly contacted us and Alessandro immediately started his healthcare pathway: 20 sessions of HBOT at 2.5 bar, together with advanced technique treatments.

Since the very beginning, Alessandro was extremely good. He was accompanied by his mother Bianca and he entered the hyperbaric chamber with a really brave attitude. After the first sessions, the wound significantly improved.

Are you curious to know how he is today? Alessandro ended the therapies nearly a month ago and the wound completely healed. The only inconvenience is that he will need to pay more attention to expose his hand to the sun and to use a shovel and a small bucket.

Seeing the joy in his eyes compensates for any hardships suffered before. These are the real satisfactions of our job. In two months Alessandro will start the first year of primary school and, also thanks to us, he will be ready to start writing.
Dear Doctor,

On Saturday 30 June I dived in open circuit at a 100 mt. depth with 22 minutes at the bottom and a final run-time of 145. I got out of the water with an average depth of 32 mt. (bottom mix 10/60 and decompression mix 21/35, 50/20 and oxygen). After I went out on the inflatable boat, I perceived a sense of complaint, similar to the congestion symptoms. This caused me a sensation of cold and sweating. Once returned to the port, I assumed oxygen for nearly 40 minutes. I drank a lot of water and the malaise disappeared. After three hours I came back home by car.

As I was really tired I went to sleep and although I felt quite tired the Sunday went well. In the late night (11:30/11:45 pm) oedema in the lower belly and in the genital area appeared. This is the reason why the morning after I decided to contact the DAN. After having ascertained the absence of pain and/or skin rashes, the doctor I spoke to recommended me to assume oxygen for two hours and then to verify the situation.

After the second contact, at around 2 pm, I was recommended a visit to my general practitioner to verify the general situation and possibly to repeat the assumption of oxygen, if I had enough. The general practitioner visited me on Monday afternoon and confirmed a 97% oxygenation and a pressure of 80/140 (I normally have 80/120). Oedema still persisted.

At that point, my general practitioner recommended me to speak to a hyperbaric doctor. I forwarded the email to the DAN general practitioner on Monday evening and I repeated the oxygen assumption for one hour. On Tuesday morning I got contacted by the DAN doctor who suggested me to follow my general practitioner’s advice and to attend the nearest Hyperbaric Centre, which got alerted by the Emergency Department of the hospital. After attending the Emergency Department, where I underwent the ECG and blood tests, I got visited by a hyperbaric doctor. After the visit, he hypothesized that I was subjected to a skin decompression sickness that affected the lymph system. However, at the current stage, the parameters resulted “normal”. The oedema was still present, although in regression, and during palpation, the lymph nodules of the lower abdomen weren’t swollen. This is the reason why, after nearly 36 hours from diving, he didn’t recommend the hyperbaric chamber treatment.

When I asked when I could start diving again, he told me to stop for two/three weeks.

I sent the Emergency Department medical report to my general practitioner who recommended me to implement the blood tests and to add the urine tests. I underwent these exams on Wednesday morning and the values of the framework were nearly standard. The value of D-dimer was 911 while homocysteine was 16.

In the light of this, I kindly ask you if the before mentioned values can be altered because of the event occurred and if you also think I should stop diving as the hyperbaric doctor recommended.

Thank you in advance, waiting for your reply,

Filippo

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**Dr Paolo Della Torre answers**

Dear Filippo,

I read your story with great interest. I believe it is necessary to make some considerations. Certainly, it was a difficult diving, but I don’t see any critical element in your diving in terms of planning. No mistakes were reported during the return journey. Therefore, the symptoms might be defined as “undeserved”, as it often happens during the majority of the decompression diving accidents (nearly the 60% according to the DAN et al.).

I would like to make a few comments about the symptoms you are talking about.

**During the surfacing:**

- A sense of complaint similar to the congestion symptoms
- A sense of cold and sweating (disappeared after the normobaric oxygen treatment for 40 minutes and liquids).
Then:
- Fatigue
- Oedema appearance in the lower belly and in the genital area (on Sunday evening after more than 1 day).

The sense of malaise and cold are often reported to as onset symptoms in case of decompression accident (as you properly did, by breathing oxygen and assuming liquids). As you referred, the “appearance” of an oedema in lower belly and in the genital area on Sunday evening is quite unexpected, not for the location or oedema (as a symptom, without skin rashes or pain/itch, as it happens for the lymphatic manifestation), but for the time of onset. The symptoms in the cutaneous and lymphatic forms are more frequent in the first moments of surfacing. It is hard for them to appear after 24 hours (is it possible that you didn’t realize it before?).

In order to understand your doubts, I must tell you that I agree with my colleague who believed that therapeutic recompression in the hyperbaric chamber is useless. The lymphatic forms of skin decompression sickness, in particular, poorly respond to it. Generally, they solve independently without sequelae. By the way, is the oedema completely resolved?

Furthermore, I agree with you with the recommendation to further investigate after the evidence of alteration of the D-dimer and Homocysteine blood levels that suggest an increase of the cardiovascular risk. Meanwhile, it is necessary to suspend dive activities.

Last but not least: the cutaneous and lymphatic forms of skin decompression sickness, especially if “undeserved”, are very often linked to the presence of right-to-left shunt (among which PFO is the most renowned).

I strongly recommend you to undertake the necessary steps to define the presence (and the hemodynamic significance) of a potential shunt. If present, in particular, in association with a possible condition of thrombophilia, this might be a risky condition not only for diving.

Best regards,
Paolo Della Torre

Dott. Paolo Della Torre
Degree in Medicine and Surgery at the University of Milan and specialized in Medicine of Swimming and Diving Activities at the University "G. D’Annunzio" of Chieti. Subscribed to the Medical Council of Rome, Number 42375
Holidays at the seaside and small inconveniences: how to deal with them?

When we are on holiday we want to have fun, sunbathe, relax and take refreshing dips in the beautiful sea.

Unfortunately, it might happen that small inconveniences occur during the day at the seaside, such as stings caused by jellyfishes, weevers, sea urchins, corals, bees or wasps.

In all such cases, skin contact causes a strong pain, soreness and redness. In particular, people with allergies might suffer from serious allergic reactions (with a high risk of anaphylactic shock).

Let’s see all together how to do in case of a close encounter with one of them:

- **Jellyfish**: when a jellyfish touches the person, it releases a substance that causes burns and redness of the skin. First, it is necessary to flush the affected area with seawater and to verify if any part of the jellyfish is remained attached to the skin. In order to soothe any irritation and to block toxin diffusion, it is necessary to apply an astringent aluminium chloride lotion (such as the Most astringent gel or the Urtica gel cream).

- **Weever**: the weever lives in the sandy seabeds and it can occur that it is stepped on because it camouflages itself with sand. Its sting is very painful and it causes swelling and redness in the affected area. To reduce pain, it is necessary to dip the skin in hot water in hot sand, because venom is deactivated by heat.

- **Sea urchin**: the seas urchin lives in the rocky and shallow bottoms or cavities on the rocks. Its thorns are really fragile. If you step on them they can break and they can remain pushed into them. They are really painful; this is the reason why it is important to remove them without breaking them. It is good to flush the affected area with water and vinegar or to place a cortisone cream compress.

- **Coral**: wounds caused by coral are easily recognizable because the skin inflames and becomes red and swollen. It is important to remove the coral fragments that might have remained in the skin. If the coral pertains to not urticant species, it is necessary to clean the wound with a mixture of water and hydrogen peroxide. Then, wash with fresh water. If it is urticant, it is better to use vinegar because it reduces the effect of the coral irritant toxins. After washing the wound with vinegar, it is possible to apply a cortisone cream to relieve the itching. These treatments can be done only if the contact with the coral didn’t cause any cut. Instead, in case of sharp injury (due to rubbing on coral), it is necessary to be monitored by qualified medical personnel.

- **Bees or wasps**: bees or wasps are often on flowers and can make beehives in the most unthinkable places. First, it is necessary to verify if the stinger remained inside the skin. If it is present, it needs to be removed. Then the affected area needs to be flushed with water and soap. Finally, it is necessary to apply ice and cortisone cream.

If you notice that stings or wounds get worse, please speak directly to qualified medical personnel.

Now that we know how to deal with these nice inhabitants of the sea, we wish you all a nice summer!
The good practices to help your loved ones with reduced mobility

Every day a lot of patients arrive at the Hyperbaric Centre of Ravenna accompanied by their loved ones. Over the many years of activity, we have found that the aid of the family members is essential for the patient with reduced mobility, not only from the physical but also from the psychological point of view. Love and affection are common keys to improve and help to heal. If combined with the right treatments, they can really make the difference.

When the patients arrive at the Hyperbaric Centre of Ravenna, they are accompanied by well-trained personnel who know how to assist them in the best of the ways depending on their disease. The assistance to a non-self-sufficient or partially self-sufficient patient often results in the need to lift, transfer, mobilize and reposi-tion them. As very often they are fragile and debilitated patients, these movements become very complex and risky, both for the patient and for the caregiver (literally “the one who takes care of the others”, both healthcare professional or relative). For example, they may lead to incorrect postures or dangerous movements that can cause serious damages to both muscles and joints.

Often the relatives ask some advice on how to take care of their beloved ones in the best possible way by preserving the well-being of both parts. We asked our physiotherapist Maddalena Vassura to reveal us some simple and effective tricks on how to facilitate the movement and the transfer of the non-self-sufficient or partially self-sufficient patients.

- **Move the weight as close as possible to oneself:** the strength necessary to lift weight increases as it goes far from the body. Therefore, it is essential to come as close as possible to the patient, for example, by placing a knee on the bed, in order to minimize the lifting effort.

- **Keep your balance:** it is always necessary to have a good supporting base to guarantee the necessary balance during a patient’s transfer. A good way to have more stability is to stand with your feet slightly apart and to bend your knees in order to lower the centre of gravity.

- **Use proper grabs:** they are essential to preserve the patient’s safety. You need to do an enveloping hand massage, with secure and solid grabs, possibly on fixed segments. When made on the limbs, they act as a support and they need to be proximal (the nearest as possible to the trunk). If the load is on the chest, they need to be made on the scapula-humeral girdle (shoulder blades area) or on the pelvic girdle (pelvis).

- **Protect the spine from overload:** it is extremely important that the caregiver safeguards his well-being. Excessive loads or incorrect movements can damage the spine. Therefore, it is necessary to bear in mind that the muscular effort of the movement must be only on the limbs. Potential twisting of the spine must be avoided. You need to “turn” the entire body by accompanying the movement.

- **Use the available aids:** their aim is to reduce the functional overload on the caregiver’s spine. They can be distinguished as “major” and “minor” lifts. The adjective “minor” makes reference to their small size and not to their efficacy. The “minor” aids include sliding sheets to mobilize the bedridden or seated patient, boards to transfer the patient in the supine or seated position, ergonomic seatbelts for support and walking, ergonomic towels and bands with transfer and mobilization handles, slabs and revolving cushions for the assisted rotation of the standing or seated patient.

We remind you that the recommendations listed in this article are valid as a general rule, but they need to be adapted to the patient’s individual situation.

Indeed, besides having limited or no mobility, the patient might not collaborate, understand or speak plainly. Moreover, there might be further obstacles to limit the caregiver’s possibility to move (such as intravenous feeding, medical equipment or reduced space).

It is advisable to always ask your own doctor or health care professional to adopt the most appropriate procedures for your specific condition.

For further information or to fix the first visit for an evaluation with our physiotherapist Maddalena, please do not hesitate to contact our secretariat at the +39 0544 500152 or write an email to segreteria@iperbaricoravenna.it
### SERVICES LIST

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### MEDICAL FITNESS TESTING

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### REGENERATIVE MEDICINE

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### PODOLOGY

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# SERVICES LIST

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## HYPERBARIC OXYGEN THERAPY

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## MEDICATIONS - INSTRUMENTAL EXAMS

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“I can’t go away without saying goodbye and hugging my angel Marina”

Sergio is a really nice patient from Riccione. He ended the cycle of hyperbaric oxygen therapy to treat a wound. He didn’t want to go away without saying goodbye to “his” Marina.

We will miss you joy, Sergio! The best of luck to you!