day were included in group A (17 patients); patients who did not meet these criteria were included in group B (17patients). Main age of patients 29 ± 8.3 years. The volume of sperm fluids was 3.4 (± 1.3) in group A but in group B was 3.3 (± 1.9) (p > 0,05). The total sperm count in group A was 29,1 (± 21.4) million while in group B it was 48.2 (± 31.1) million (p < 0.02). Sperm count in group A was 12,5 (± 8.0) million/ml^{-1} while in group B was 22,5 (± 19.9) million/ml^{-1} (p < 0.04). The progressive motility (a+b) was in group A was 31.5% (± 15.4) while in group B was 35.2% (± 19.3) (p > 0.05). Furthermore, the percentage of morphologically normal spermatozoa in group A was 3.2% (± 1.9) while in group B there was a percentage of morphologically normal spermatozoa of 8% (± 4.5) (p < 0.0001).
Conclusions: It may be concluded, with the necessary precautions given the limitations of our study, that the use of the laptop and especially the non-thermal effects resulting from it can lead to a decrease in spermatozoa concentration and a change in the spermatozoa morphology. New controlled studies will be needed to investigate these issues of great interest today.

SC8 Diagnosis of Peyronie's disease and Shear Wave Elastosonography of the penis: New non-invasive method

F. Trama, E. Illiano, A. Ruffo, F. Iacono, E. Costantini (Napoli)

Introduction: The main objective of the study is to identify a possible relationship between penile rigidity and pain in erection and subsequent appearance of plaques typical of La Peyronie's disease. To this end, the use of Shear Wave Elastosonography of corpora cavernosum in clinical practice, was evaluated in order to demonstrate the presence of penile fibrosity (expressed at tissue level as stiffness) typical of the early stages of La Peyronie's disease in patients with pain in erection, and thus to undertake specific therapy.
Materials and methods: This was a prospective study. The following subjects were excluded from the study: diabetes, previous pelvic surgery, patients who had taken PDE5i less than three months ago, or who had previously been treated for La Peyronie's disease. The inclusion criteria were subjects with erectile pain, subjects with palpable or visible plaque on B Mode ultrasound. All patients underwent Elastosonography shear wave of the corpora cavernosa, filling in the VAS questionnaire regarding pain and ultrasound B - Mode.
Results: 85 patients were recruited within less than six months of the first visit. The results obtained reveal that the baseline VAS score correlates positively with the rigidity of the corpora cavernosa expressed in kPa (according to Young's module) obtained by Elastosonography shear wave (p < 0.05). There was no statistically significant correlation (p = 0.09) between the presence of hyperecogenic plaques on B-mode ultrasound and the VAS score. At 6 months, there was a statistically significant increase in the rigidity of both corpora cavernosa respect to baseline (p < 0.05) with a significant decrease in the VAS score with respect to baseline (p < 0.04). In addition, there was a positive correlation between patients with a score >28 kPa (expressed as an average of both corpora cavernosa) and the appearance of hyperecogenic plaques on ultrasound B - mode (p < 0.03).
Conclusions: Shear wave Elastosonography of corpora cavernosa can be used in daily clinical practice to make an early and non-invasive diagnosis of La Peyronie's disease in order to undertake therapies aimed at decreasing the painful symptomatology since its onset, and to slow down the evolution of the disease.

SC9 Impact of extracorporeal shock wave therapy for erectile dysfunction and Peyronie's disease on hormonal and reproductive testicular function: Results from a randomized controlled trial

U. Amicuzi, C. Manfredi, C. Quattrone, F. Bottone, F. Paolo Calace, G. Bellastella, M. Stizzo, M. Olivetta, P. Cirillo, D. Arcaniolo, M. De Sio (Napoli)

Introduction: Extracorporeal shock wave therapy (ESWT) is an emerging treatment for erectile dysfunction (ED) and Peyronie's disease (PD). Concerns on safety of ESWT on testicular function raised from animal studies. To date, there is no data available regarding the effects of ESWT on human fertility and testosterone production. The aim of the present study is to evaluate the hormonal and reproductive testicular function in patients undergoing ESWT for ED or PD.
Materials and methods: We designed a randomized controlled trial (RCT) in which consecutive patients with ED or PD were enrolled. Men aged between 18 and 40, with normozoospermia and vasculogenic ED or acute phase of PD were included. Patients with infections or cancers in the treatment area, male accessory glands infections (MAGI), and non-suspend able anticoagulant therapy or coagulation disorders were excluded. Computer-based randomization (1:1) was used to assign subjects to group A (ESWT) or group B (no treatment). ESWT was performed with DUOLITH SD1 T-TOP (Storz Medical AG, Tägerwilen, Switzerland) by a trained urologist. Two session per week for 3 weeks was performed in ED patients, while one session per week for 4 weeks was performed in PD patients. Each session included 3000 shock waves (0.10–0.25 mJ/mm^2, 4–6 Hz). Semen analysis and total serum testosterone concentration were assessed before and 3 months after ESWT in the group A. In the group B the same evaluations were performed at baseline and after 3 months. The reading and interpretation of the seminal exams was performed by an expert semiologist according to the WHO criteria (5th edition - 2010). All adverse events (AE) were recorded during the study period.
Results: A total of 60 patients were enrolled in the study (30 group A, 30 group B). No significant difference was found at baseline in seminal parameters and testosterone levels between the two groups. In the group A no significant difference in seminal volume, total sperm count, sperm concentration, total and progressive motility, and morphology was found (p > 0.05) after treatment, while a significant reduction in seminal pH (8.3 ± 0.2 vs. 8.0 ± 0.1; p < 0.001) was observed after. No significant difference in testosterone levels was recorded (p = 0.584) in the group A after ESWT. In the group B no significant difference in the semen parameters and in testosterone levels was detected (p > 0.05). No severe complication (Clavien-Dindo III-V) occurred.
Conclusions: ESWT in ED and PD patients does not seem affect hormonal and reproductive testicular function. Further RCTs with larger sample size and longer follow-up are needed to confirm our results.

SC10 miR-20a-5p expression as a potential non-invasive diagnostic biomarker in patients with non-obstructive azoospermia

G. Cito, P. Pinzani, R. Fucci, R. Picone, F. Salvianti, C. Giachini, P. Falcone, E. Micelli, A. Cocci, P. Verrienti, A. Minervini, M. Carini, M. E. Coccia, A. Natali (Firenze)

Introduction: Recently, alterations in the expression of specific microRNAs in semen have been linked to altered spermatogenesis suggesting their expression could be used as potential infertility

biomarkers and explain the molecular mechanisms underlying the altered spermatogenesis. The objective of the study is to evaluate the blood plasma miR-20a-5p expression in infertile patients with non-obstructive azoospermia (NOA) compared to healthy normozoospermic men.
Materials and methods: From January 2018 to December 2019, 24 infertile couples were prospectively enrolled. All the patients were included into two groups: Group 1 infertile men with NOA, Group 2 healthy normozoospermic men belonging to couples with female infertility tubal factor who achieved pregnancy using IVF or ICSI. The expression of circulating miR-20a-5p was assessed by RT qPCR in plasma samples. A relative quantification strategy was adopted using the 2-ΔCqmethod to calculate the target miR-20a-5p expression with respect to miR-16-5p as endogenous control. Total cell-free RNA extracted from 0.5 ml plasma using the mirVana PARIS kit was submitted to RT-qPCR using TaqMan Advanced miRNA cDNA Synthesis Kit and TaqMan® Advanced miRNA Assays.
Results: Group 1 included 14 patients, Group 2 10 men. Mean male age was 35.6 ± 4.2 years. Considering the Group 1, mean FSH value was 19.4 ± 7.8 IU/l, LH 8.5 ± 3.4 IU/l, TT 12.5 ± 3.9 nmol/l, TSH 2.0 ± 1.1 mIU/l, PRL 10.5 ± 3.2 ng/ml. Mean right and left testicular volume (TV) was 8.9 ± 5.2 ml and 8.2 ± 4.5 ml, respectively. Group 2 showed hormonal levels and TV in the normal range. All NOA underwent testicular sperm extraction. Successful sperm retrieval (SR) with cryopreservation was found in 8/14 patients (overall SR rate: 57.1%). Mean sperm concentration was 0.001 ± 0.0001 × 106/ml, motility 0.2 ± 0.6%, biosystem straws collected 3.2 ± 2.0. Mean miR-20a-5p value was 0.25 ± 0.20 and 0.06 ± 0.02 in the Group 1 and Group 2, respectively. Thus, the relative expression of miR-20a-5p was significantly higher in patients affected by NOA than in healthy normozoospermic control subjects (p = 0,026).
Conclusions: Blood plasma miR-20a-5p could represent a potential non-invasive diagnostic biomarker in infertile patients with non-obstructive azoospermia. A possible correlation of this marker with testicular histopathological findings could allow the clinician to correctly counsel the azoospermic patients in performing surgery for fertility purpose.

SC11 Experience of oxygen-ozonetherapy in the management of erectile dysfunction in diabetic patients poor responder to 5-phosphodiesterase inhibitors. Preliminary results and follow-up

F. Muzi, P. M. Michetti, M. Taffo, G. Tati (Roma)

Introduction: Erectile dysfunction (DE) has higher incidence in diabetic patients. Microvascular damages, persistent oxydant activity of free radicals (ROS), endothelial dysfunction are at the basis of frequent poor outcome of 5-phosphodiesterase (5-PDE) inhibitors for DE in this particular category of patients. Endothelial nitric oxide synthase expression increased significantly with ozone therapy in some animal models. In this study we have evaluated the effects of systemic oxygen-ozonetherapy (OOT), defined autohaemotherapy (AHMT) as possible supplementary therapy in non responders to 5PDE inhibitors.
Materials and methods: The rational of OOT is in hormetic properties, i.e. paradoxal antioxidant effects obtained at low concentration of oxygen-ozone combination, aiming the reduction of all free oxydative molecules, especially nitroxic and oxygen radicals. We have selected 13 patients aged 50–70 years affected by type 2 diabetes in association with ED. All patients are diabetic in good glycemic control. All patients, non responders to 5PDE inhibitors, have been submitted to 10 weekly applications of autohaemotherapy (AHTM): from every patient we have taken venous sampling of 200 ml of blood enriched with an ozone gas mixture, administered by a specific medical device with a concentration between 30 and 70 mcg/ml then immediately reinfused. During AHTM cycle and 2 month follow up all patients have taken daily tadalafil 5 mg. All patients have been evaluated with IIEF15 before and after 2 months follow up. All patients and their partners have been also evaluated by psychosexual counseling with weekly sitting, at the beginning for the selection, during all phases of AHTM therapy and during 2 month follow-up.
Results: All patients improve quality and quantity of erections with a rising response to 5PDE inhibitors during the 2 month follow up. Psychosexual couple counseling also show qualitative improvement of sexual relations. AHTM has been well tolerated to all patients. No side effect has been observed during the entire cycle of therapy and the 2 month follow up. All patients refer a personal daily improvement of glycemic control without any variation of therapy or lifestyle.
Conclusions: OOT could be beneficial in reducing the negative effects of diabetes on erectile dysfunction as a result of enhanced enzymatic activity in endothelial factors and reducing the effect of ROS. Preliminary results need more studies with a wider number of patients. Endothelial nitric oxide synthase expression could increase significantly with OOT with more beneficial systemic effects, with minimal contraindications and no side effects. OOT could rise the quality and quantity of erections in diabetic patients, improving the outcome in the use of 5PDE inhibitors and in glycemic control. For diabetic patients, especially for poor responders to 5PDE inhibitors a multidisciplinary approach and psychosexual counseling demonstrate good synergy to improve sexual relations and quality of life.

SC12 Mid-Term effects of high-altitude on sexual hormonal parameters during a Himalayan expedition

V. Verratti, D. Bondi, A. Princiotta, T. Pietrangelo, R. Piccinelli, A. Antonelli, M. Angela Cerruto, D. Migliorelli, A. Tafuri (Chieti)

Introduction: The aim of this study is to assess the mid-term effects of altitude hypoxia on sexual hormonal parameters, comparing Italian trackers with native Nepalese porters who took part in a Himalayan expedition.
Materials and methods: Participants completed a combined circuit of 300 Km distance in 19 days with over 16000 meters of difference in altitude and average daily walk of 6 hours involving a demanding route with ascent and descent in the Himalayas, Nepal. The analyses were performed on two groups of participants: 6 Italians and 6 Nepalese. The effect of high-altitude on Hypothalamus-hypophysis-gonads axis (FSH, LH, Testosterone, Progesterone) was assessed for both groups. Samples were collected the day before the expedition beginning and the day after it was completed. The Italians had an additional sample after 10 days (follow-up sample).
Shapiro-Wilk test, Q-Q plots, Levene's test for equality of variances, Repeated Measures - ANOVA. were adopted. Significance (p value), effect size (partial $\eta 2$) were reported.
Results: Nepalese participants had LH values higher than Italians at Pre expedition evaluation (4.260 ± 2.416 mUI/ml vs 2.728 ± 1.004 mUI/ml, respectively), that was increased at Post expedition in both groups (4.598 ± 1.605 mUI/ml vs 3.262 ± 1.605 mUI/ml). Among Nepalese, we found a more important reduction in FSH concentration from Pre and Post expedition (5.840 ± 2.001 mUI/ml to 5.054 ± 2.215 mUI/ml) respect to Italians (from 5.106 ± 1.483 mUI/ml at Pre to 4.958 ± 0.999 mUI/ml at Post and down 5.070 ± 0.961at Follow up). Testosterone concentration decreased from Pre to Post expedition (p = 0.109, $\eta^2 p = 0.260$, $\omega^2 p = 0.164$) also showed by post-hoc analyses, with Nepalese participants having a greater reduction (from 4.557 ± 0.823 to 3.397 ± 1.304 ng/ml) than Italians (from 4.864 ± 1.675 to 4.354 ± 0.948 ng/ml). At Follow up, Italians increased the baseline values (6.570 ± 1.376 ng/ml), as revealed by the Pre vs Post vs Follow Up