TELEMEDICINE AS A MODALITY OF HEALTH CARE DELIVERY FOR PATIENTS WITH SEVERE CHRONIC KIDNEY DISEASE DURING COVID-19 PANDEMIC

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BACKGROUND AND AIMS: Telemedicine is a new modality of care delivery. Over the last months, it has been used to deliver health care to outpatients with chronic kidney disease (CKD) during COVID-19 pandemic. However, experience of telemedicine in patients with severe CKD is scarce and there are not reassuring data about its efficacy in improving patients’ outcome. To evaluate the efficacy and the outcome profile of telemedicine in people with severe CKD, we reviewed all data of outpatients with severe kidney impairment who underwent nephrological evaluation during the first wave of this pandemic. In particular, outcomes of the ambulatory activity (urgent-start dialysis, late referral and modalities of dialysis initiation) were compared to 2019 ambulatory activity.

METHOD: Outpatients with severe chronic kidney disease included in the ambulatory program called “Pre-Dialysis Program” were enrolled in a retrospective study. We reviewed all electronic charts of patients who underwent nephrological follow-up from 9th March to June 21st, 2020 (15 weeks in total) at the University Hospital of Modena,
Italy. Extension of the observation period to 30th September 2020 allowed us to determine the long-term effects of telemedicine on the rate of urgent-star dialysis, late referral, and modalities of dialysis initiation.

**RESULTS:** During 15 weeks of follow-up, 186 nephrological visits were performed (Table) They were subdivided into telemedicine visits (56.5%) and in-person visits (43.5%). Overall, mean age of patients was 71.7 ± 13.1 years with a prevalence of male (60.2%). Patients who received telemedicine visits had a statistically significant lower sCr (1.7 ± 1.2 vs 4.5 ± 1.5 mg/dl; P=0.0001) and higher eGFR level (14.7 ± 6.02 vs 12.16 ± 5.8 eGFR/m²/min; P=0.002) than patients followed in the ambulatory setting. A high prevalence of patients with CKD stage 5 was monitored by in-person visits (P=0.0001). Patients followed by telemedicine had a clinical profile including a lower weight (P=0.007) and better control of metabolic acidosis (P=0.039) than the counterpart. Changes in domiciliary therapy occurred more frequently in patients monitored in the ambulatory setting (P=0.036). Statistically significant differences were encountered in the prescription of diuretics (P=0.002), sodium bicarbonate (P=0.043), antihypertensive drugs (P=0.001) and uric acid-lowering agents (P=0.046). During the 15-week period in 2019, 214 visits were performed (+1.3% compared to 2020). The vast majority of these visits were conducted in the hospital setting (210 out of 214; 98.2%). The severity of CKD was similar between patients, without statistically significant difference in the rate of patients in CKD stage III (P=0.7), stage IV (0.388) and stage V (P=0.593).

Implementation of telemedicine to in-person visits during COVID-19 pandemic did not change the outcomes of patients. Short-term follow-up showed a similar rate in urgent-start dialysis (P=0.361), late referral (P=1), and HD (P=0.875) or PD initiation and stage V (P=0.593).

**CONCLUSION:** Implementation of telemedicine has been fundamental to maintain a high level of care in CKD patients during the COVID-19 pandemic. Telemedicine services in combination with in-person visits have contributed to the delivery of clinical monitoring in a group of patients with severe and progressive CKD. No differences have been identified in terms of rate of unplanned dialysis, late referral, and modality of dialysis initiation.

| Variable | All patients | Telemedicine visits | In-person visits | P-value |
|----------|-------------|-------------------|-----------------|--------|
| Age (yrs) | 71.7 ± 13.1 | 71.7 ± 13.1 | 71.7 ± 13.1 | 0.89 |
| sCr (mg/dl) | 1.7 ± 1.2 | 1.7 ± 1.2 | 1.7 ± 1.2 | 0.0001 |
| eGFR (ml/min/1.73 m²) | 14.7 ± 6.02 | 14.7 ± 6.02 | 14.7 ± 6.02 | 0.0001 |
| Blood pressure | 130/85 | 130/85 | 130/85 | 0.0001 |
| Hemoglobin (g/dl) | 12.1 ± 1.5 | 12.1 ± 1.5 | 12.1 ± 1.5 | 0.225 |
| Sodium (mEq/L) | 136.3 ± 2.2 | 136.3 ± 2.2 | 136.3 ± 2.2 | 0.009 |
| Potassium (mEq/L) | 4.7 ± 0.8 | 4.7 ± 0.8 | 4.7 ± 0.8 | 0.87 |
| Creatinine kinase (IU/L) | 41 ± 20 | 41 ± 20 | 41 ± 20 | 0.229 |
| BMI | 27.7 ± 5.2 | 27.7 ± 5.2 | 27.7 ± 5.2 | 0.062 |
| Heart rate (bpm) | 72 (60-82) | 72 (60-82) | 72 (60-82) | 0.216 |
| SBP (mmHg) | 140 (120-160) | 140 (120-160) | 140 (120-160) | 0.007 |
| DBP (mmHg) | 80 (60-100) | 80 (60-100) | 80 (60-100) | 0.007 |
| eGFR (mL/min/1.73 m²) | 66 (40-100) | 66 (40-100) | 66 (40-100) | 0.007 |
| Changes in drug prescription, mean (SD) | -1.05 (1.05) | -1.05 (1.05) | -1.05 (1.05) | 0.006 |
| Specific drug, n (%) | Antiplatelet | 31 (25.8) | 31 (25.8) | 31 (25.8) | 0.86 |
| Antiplatelet | 21 (17.1) | 21 (17.1) | 21 (17.1) | 0.86 |
| Anticoagulants | 27 (22.2) | 27 (22.2) | 27 (22.2) | 0.86 |
| Anticoagulants | 27 (22.2) | 27 (22.2) | 27 (22.2) | 0.86 |
| Anticoagulants | 27 (22.2) | 27 (22.2) | 27 (22.2) | 0.86 |
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| Anticoagulants | 27 (22.2) | 27 (22.2) | 27 (22.2) | 0.86 |
| Anticoagulants | 27 (22.2) | 27 (22.2) | 27 (22.2) | 0.86 |

**Abstracts**

**MO185**

**THE GUT MICROBIOME-DERIVED METABOLITE TRIMETHYLAMINE N-OXIDE AS A POTENTIAL BIOMARKER IN PATIENTS WITH CHRONIC KIDNEY DISEASE AND ATRIAL FIBRILLATION**

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**Aim:**

To determine the diagnostic and prognostic utility of the gut microbiome-derived metabolite Trimethylamine N-oxide (TMAO) as a potential biomarker in different diseases.

**Methods:**

Trimethylamine N-oxide (TMAO) in patients with lupus nephritis correlating to the clinical, laboratory and histopathological criteria obtained from Trimethylamine N-oxide levels were assessed, compared between the study groups and divided into 3 equivalent groups; group I (lupus nephritis patients (LN)), group II (SLE patients with arthropathy) and group III (SLE controls).

**Results:**

TMAO levels were found to be significantly higher in patients with lupus nephritis compared to the total SLE population (p=0.003), and to LN, and NN; p=0.003. TMAO levels correlated to Anti-dsDNA titers (p=0.01) and Anti-Ro antibodies (p=0.01) in group LN. In group NN, TMAO levels correlated to Anti-dsDNA titers (p=0.01) and Anti-Ro antibodies (p=0.01). There was no significant statistical difference of TMAO levels between (NN) and (LN) patients (p=0.62). TMAO levels correlated to Anti-ssDNA titers (p=0.01) and Anti-Ro antibodies (p=0.01) in group NN. In group LN, TMAO levels correlated to Anti-ssDNA titers (p=0.01) and Anti-Ro antibodies (p=0.01). There was no significant statistical difference of TMAO levels between (NN) and (LN) patients (p=0.62).

**Conclusion:**

Trimethylamine N-oxide is strongly associated to most studied criteria of disease severity. The possible confounding effect discriminates between LN and NN patients as well as did not show significant correlations to the other studied clinical-laboratory and histopathological factors.

**MO259**

**DIAGNOSTIC AND PROGNOSTIC UTILITY OF TMAO AS A POTENTIAL MARKER IN PATIENTS WITH LUPUS NEPHRITIS**

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**Aim:**

To assess the diagnostic and prognostic utility of TMAO as a potential marker in different diseases.

**Methods:**

Trimethylamine N-oxide (TMAO) in patients with lupus nephritis correlating to the clinical, laboratory and histopathological criteria obtained from Trimethylamine N-oxide levels were assessed, compared between the study groups and divided into 3 equivalent groups; group I (lupus nephritis patients (LN)), group II (SLE patients with arthropathy) and group III (SLE controls).

**Results:**

There was a significant correlation between TMAO levels and Anti-dsDNA titers in group LN (p=0.01) and Anti-Ro antibodies in group LN (p=0.01). There was no significant statistical difference of TMAO levels between (NN) and (LN) patients (p=0.62). TMAO levels correlated to Anti-ssDNA titers in group NN (p=0.01) and Anti-Ro antibodies in group NN (p=0.01). There was no significant statistical difference of TMAO levels between (NN) and (LN) patients (p=0.62).

**Conclusion:**

TMAO has been previously studied as a discriminator between SLE and healthy volunteers with higher reported TMAO levels in the SLE group; however, no correlation with the disease activity has been found. In our study, we found a significant correlation of TMAO levels with the clinical activity of lupus nephritis, as well as with the histopathological changes and the degree of proteinuria.