age, sex, BMI, Laboratory data, Medications, Bone mineral density (BMD) by DXA, Diabetes status and medications pre and post operatively.
Results:
Data collected include 227 patients with solid organ transplants. Out of those, only 88 had BMD evaluation and only 45 had follow up BMD. Out of 88 with baseline BMD, 16 had osteoporosis, 36 had osteopenia and 36 had normal BMD. Although 51 were on Bisphosphonates, many of them did not have follow up DXA scans. 157 were receiving Vitamin D supplementation but very few had levels checked.
A total of 158 patients had Diabetes, with 95 having pre-existing diabetes and 52 were diagnosed post transplantation. The time of onset was unknown in 11 patients. Majority of patients with pre-existing diabetes required intensification of their medications for diabetes to achieve optimal glycemic control.
Discussion
A multitude of factors including type of transplant, individual pre-operative metabolic profiles, choice of immunosuppressive agents and certain infections increase the risk of these metabolic complications. Given the complex post-operative care, issues with immunosuppressive agents and other comorbidities, metabolic bone disease and other complications may go unnoticed and under recognized which may later lead to higher risk of fractures, morbidity and mortality.
Conclusion
This study highlights the importance of monitoring prudently for metabolic changes after solid organ transplantation. Early identification and aggressive management of these complications may help decrease morbidity and mortality related to fractures and sub-optimal glycemic control.

Thyroid

THYROID NEOPLASIA AND CANCER

Nivolumab-Induced Hypothyroidism Is Irreversible in Most Patients

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MON-499

Background Thyroid dysfunction caused by the immune checkpoint inhibitor (ICPI) is common, however mild dysthyroidism could occur easily in cancer patients due to other causes. The aim of this study was to investigate the incidence and clinical course of ICPI-induced hypothyroidism requiring thyroid hormone replacement. **Patients and methods** We analyzed baseline and follow up thyroid function tests of cancer patients treated with nivolumab between March 2016 and March 2019 at Chonnam University Hwasun Hospital retrospectively. **Results** Among 265 cancer patients treated with nivolumab therapy, six patients were excluded from the study because they were on thyroid hormone replacement therapy before starting nivolumab therapy. Twenty-one patients (8.1%) newly developed thyroid dysfunction during nivolumab therapy and sixteen patients (6.2%) required thyroid hormone replacement therapy due to drug-induced hypothyroidism. Cancer diagnoses included lung cancer (n=7), renal cell carcinoma (n=4), malignant melanoma (n=2), hepatocellular carcinoma (n=2), and esophageal cancer (n=1). Six patients (37.5%) showed thyrotoxic phase prior to overt hypothyroidism and the others (n=10, 62.5%) revealed hypothyroidism without thyrotoxic phase. Most ICPI-induced hypothyroidism was irreversible, only one patient was able to discontinue thyroid hormone replacement after quitting nivolumab therapy. **Conclusion** A significant number of patients treated with nivolumab developed ICPI-induced hypothyroidism requiring thyroid hormone replacement and its clinical course was irreversible in most patients.

Adrenal

ADRENAL - TUMORS

Adrenocortical Cancer Is Diagnosed at Large Size and Advanced Stage in a Canadian Referral Center; Focus on Modes of Presentation Depending on Stages

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SAT-169

Context: Adrenocortical carcinoma (ACC) is a rare tumor with an incidence of 0.7-2 per million. Based on the ENSAT staging classification, tumor stage is the most important prognostic factor; the presence of lymph nodes involvement and metastases is an indicator of poor prognosis. Absence of any local or distant tumor invasion represents an early stage disease and is classified based on tumor size of <5 cm (stage I) or >5 cm (stage II). Advanced disease is confirmed if there is tumoral invasion, either locally in the surrounding tissues/nodes (stage III) or in other organs/vascular structures (stage IV).
Objective: To describe patient characteristics, staging and modes of presentation at initial diagnosis in our cohort of ACC patients.
Methods: We retrospectively reviewed paper and electronic charts of patients with pathology-confirmed ACCs who were treated at our referral center from 1995 to May 2019.
Results: One hundred four patients were diagnosed with ACC: 28 were men (26.9%) and 76 (73.1%) were women and median age was 51 years. The overall modes of presentation were hormonal hypersecretion (40.4%), mass-related symptoms (36.5%), incidentalomas (17.3%) and unknown (1.9%). Hormonal profile was available for 71 tumors: 67,6 % were secreting [androgen and cortisol co-secretion (39.4%), cortisol only (28.2%)] and 18,3% were non-secreting. At initial diagnosis, sixty-four patients (61.5%) had tumors >10 cm including 32.7% between 10-14.9 cm (n:34), 19.2% were 15-20 cm (n:20) and 9.6% were >20cm (n:10). Initial ENSAT stages were I (6.7%), II (17.3%), III (28.8%) and IV (44.2%) and unknown (2,9%). The age repartition was similar for most patients (median ~50 yo) regardless of disease stage or tumor size except in the subgroup of very large tumors (>20 cm) for which the median age was 40 yo. The mode of presentation at initial diagnosis varied at various

stages. Incidentaloma was a frequent mode of presentation of earlier ACC stages; Stage 1: 3/7 (42,9%), stage II: 7/18 (38,9%), stage III: 4/30 (13,3%) and stage IV: 4/46 (8,7%). Hormonal excess symptoms led to ACC diagnosis less frequently in early stages (stages I and II) (24%) than in later stages (stage III and IV) (47,3%), while the hormonal work up showed high prevalence of secreting tumors in both groups (58,8% and 88,7%). Mass-related initial symptoms were similar in both groups 36% vs 39%.

Conclusions: In our cohort, 61.5% of ACC tumors were larger than 10 cm at initial diagnosis. Seventy-three percent of ACC patients had an advanced ENSAT stage III or IV disease which is associated with a 5 years survival of less than 50%. Incidentalomas is a frequent mode of presentation in stages I and II, while clinical hormonal excess symptoms were more frequent in later stages III and IV. Early stage diagnosis presents a difficult challenge in ACC and new biomarkers are needed to improve the odds against this deadly cancer.

Bone and Mineral Metabolism

OSTEOPOROSIS AND VITAMIN D

Understanding Why Older People with Low Trauma Fractures Die Prematurely

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OR13-03

There is increasing evidence that all proximal and not just hip fractures are associated with increased mortality risk. However, the cause of this increased mortality is unknown. We sought to determine the post-fracture trajectories of subsequent hospital admissions and mortality to develop an understanding of why patients with non-hip fractures die prematurely.

This nationwide Danish population-based study included all individuals aged 50+ years who sustained an incident fragility fracture between 2001 and 2014. High-trauma fractures or individuals with fracture prior to 2001 were excluded. Fracture patients were matched 1:4 by sex, age and comorbidity status with non-fracture subjects alive at the time of fracture. Comorbidities included 33 unique medical conditions of the Charlson or Elixhauser comorbidity index. We modelled the contribution of specific fractures on the risk of subsequent admissions or death within the following 2 years.

There were 212,498 women and 95,372 men with fracture followed by 30,677 and 19,519 deaths, respectively over 163,482 and 384,995 person-years of follow up. Mean age at fracture was 72± 11 for women and 75± 11 for men. Proximal fractures including hip, femur, pelvis, rib, clavicle and humerus had increased mortality compared with their matched non-fracture counterparts with HRs ranging from 1.5-4.0, while distal fractures such as ankle, forearm, hand or foot fractures had similar or lower mortality risk.

Almost 75% of men and 60% of women had ≥1 comorbidity. For every additional comorbidity, risk of mortality increased for all fracture types. However, only for proximal fractures did the fracture itself independently increase mortality risk over and above co-morbidity status.

The 2-yr post fracture admission and mortality patterns differed between proximal and distal fractures. Proximal, but not distal fracture subjects had greater risk of any major hospital admission (including cardiovascular disease, cancer, stroke, diabetes, pneumonia and pulmonary disease) within 2 years compared with their non-fracture counterparts. Distal fractures in general had similar admission patterns as their non-fractured matched counterparts. Furthermore, 2 year mortality risk was increased for proximal fractures whether or not they were admitted to hospital post fracture. By contrast, mortality risk was similar or reduced for distal fractures compared with non-fracture controls.

This study has not only confirmed the increased mortality following proximal fractures but has demonstrated differing clinical trajectories between proximal and distal fractures that contribute to this increased mortality. These findings provide important insights as to why proximal fracture subjects die prematurely that may lead to specific avenues for intervention.

Neuroendocrinology and Pituitary

NEUROENDOCRINE & PITUITARY PATHOLOGIES

Growth Hormone Deficiency and Replacement Therapy: Association with Health-Related Physical Fitness

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SUN-310

Objective: To compare health-related physical fitness (HRPF) in patients with severe adult growth hormone deficiency (AGHD) according to the deficiency onset phase, and to evaluate the effects of a six-months human growth hormone (rhGH) replacement therapy on HRPF, in a subgroup of patients. **Methods:** First arm: cross-sectional observational study at baseline of naive rhGH multiple pituitary hormonal deficiency (MPHD) hypopituitarism patients - adult-onset growth hormone deficiency (AO-GHD) versus child onset growth hormone deficiency (CO-GHD). Second