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Highlights

Rejuvenation of aging kidney

Aging is an important risk factor for various kidney diseases, including acute kidney injury and chronic kidney disease. Patients older than 65 years have nearly 28% risk of failing recovery of kidney function when suffering from acute kidney injury. In addition, more than 30% of population older than 65 years have chronic kidney disease in Taiwan, and the burden of multiple age-related disorders will increase in parallel. Since renal aging is a complex, multifactorial process, in this review, Wei et al.[1] summarized several factors involved in renal aging, such as loss of telomeres, cell cycle arrest, chronic inflammation, activation of renin-angiotensin system, decreased klotho expression, and development of tertiary lymphoid tissues. Similar changes can also be seen in other types of renal injury. Lines of evidence suggest that young blood may rejuvenate aged organs, including the kidneys. The authors thus urge to develop new therapeutic strategies for renal aging by understanding more about the mechanisms of renal aging.

Cost-effectiveness of statin therapy for secondary prevention of coronary artery disease

Clinical guidelines recommended the target low-density lipoprotein cholesterol (LDL-C) level for coronary artery disease (CAD) patients should be lowered from 100 to 70 mg/dL for secondary prevention. In this study, Lin et al.[2] assessed whether initiating statin treatment in CAD patients with baseline LDL-C 70—100 mg/dL in Taiwan could be cost-effective by using a Markov model to simulate a hypothetical cohort of CAD patients with a baseline LDL-C level of 90 mg/dL. The incidence and recurrence of MI and stroke related to specific LDL-C levels as well as the statin effect, mortality rate, and health state utilities were obtained from the literature. The direct medical costs and rate of fatal events were derived from the national claims database. The incremental cost-effectiveness ratio (ICER)

per quality-adjusted life years (QALYs) was calculated, and sensitivity analyses were performed. They showed that moderate-intensity statin use resulted in a net gain of 562 QALYs but with an additional expenditure of $11.4 million per 10,000 patients over ten years. The ICER was $20,288 per QALY gained. The probabilities of being cost-effective at willingness-to-pay thresholds of one and three gross domestic products per capita ($24,329 in 2017) per QALY were 51.1% and 94.2%, respectively. Annual drug cost was the most influential factor on the ICER. In summary, lowering the target LDL-C level from 100 to 70 mg/dL among treatment-naïve CAD patients could be cost-effective when considering the benefits of preventing cardiovascular events and mortality.

Improvement in the severity of stress incontinence after transvaginal mesh surgery for pelvic organ prolapse

Hsiao et al.[3] investigated the predictors for anti-incontinence efficacy of this anterior transvaginal mesh (ATVM) surgery. They reviewed medical records of 134 women with pelvic organ prolapse, including those who underwent ATVM only (n = 45), ATVM and posterior transvaginal mesh surgery (n = 88), and ATVM with total vaginal hysterectomy (n = 1). Multivariable analysis revealed that stage of cystocele (coefficient = 56.4), functional profile length (cm, coefficient = 61.1) and the score of general health perceptions in the King's Health Questionnaire (coefficient = −3.3) were independent predictors of the percentage change in pad weight from baseline. Seven (5.2%) women were found to have recurrent or persistent stress urinary incontinence, and 6 of the above 7 women underwent transobturator mid-urethral sling procedure. Free of further anti-incontinence surgery probabilities were 94.7% and 89.2% at 3 and 6 years after surgery, respectively. Functional profile length (hazard ratio = 2.61) was also identified as a predictor for further anti-incontinence surgery. In brief, lesser degree of cystocele, shorter functional

profile length and poorer general health perceptions were predictors of greater anti-incontinence effect after the tailored ATVM surgery.

Long-term outcome of single-dose radioiodine therapy in Graves' disease patients

The effectiveness of radioiodine (RAI) therapy for hyperthyroidism patients in Asia remains scarce. In this study, Yang et al.[4] retrospectively investigated the real-world efficacy of single-dose RAI therapy in 243 Taiwanese patients with Graves' disease (GD). Eu- or hypothyroid after RAI therapy were defined as the successful group. Kaplan—Meier curve and cox-regression model were used for analysis of prognostic factors. Of them, 187 were females, with mean age of 46.9 years. Most patients (63.8%) did not choose RAI as the first-line therapy. The median dose was 7 mCi, with a mean follow-up period of 107.1 months. The overall success rate was 70.9%. Univariate analysis revealed calculated- or fixed-dose (P = 0.015), goiter size (P < 0.001), and RAI dose (P = 0.022) were the factors affecting RAI effectiveness, multivariate analysis showed goiter size was an independent factor. Patients with grade 0—2 goiter had a higher success rate than patients with grade 3 goiter (HR = 2.1, 95%CI = 1.34—3.27, P = 0.001), although the former were treated with lower RAI dose than the latter (7.8 ± 3.2 mCi vs 8.8 ± 3.3 mCi, P = 0.049). However, if the grade 3 goiters became smaller within 3 months of therapy, the success rate was not inferior to grade 0—2 goiter. Therefore, RAI therapy for GD patients reached an overall success rate of 70.9%, with a median dose of 7 mCi, and patients with grade 3 goiter may need a more aggressive RAI regimen.

Drug—drug interaction of elbasvir/grazoprevir

Liu et al.[5] evaluated drug—drug interaction (DDI) before and during elbasvir/grazoprevir (EBR/GZR) treatment for chronic hepatitis C (CHC) patients. The patients' demographic data, comorbidities, concomitant medications taken before and during EBR/GZR were recorded. DDI was evaluated using a tool from the HEP Drug Interactions (www.hep-druginteractions.org) website. In addition to the evaluation of DDI for EBR/GZR, the virtual DDI of ledipasvir/sofosbuvir (LDV/SOF), sofosbuvir/velpatasvir (SOF/VEL) and glecaprevir/pibrentasvir (GLE/PIB) were evaluated. Degrees of DDI were classified as "do not co-administer", "potential interaction", and "potentially weak interaction". A total of 460 patients were enrolled. At baseline, 80.1% of patients had one or more comorbidities and 72.8% took one or more medications. Cardiovascular diseases (43.9%), gastrointestinal diseases (37.4%), and metabolic diseases (36.7%) were the three most common comorbidities. The prevalence of DDI before EBR/GZR treatment was 12.8% (59 patients). Among the same population, the prevalence of virtual DDI of SOF/VEL, GLE/PIB, and LDV/SOF were 38.5% (179 patients), 48.8% (220 patients), and 57.0% (262 patients), respectively. During EBR/GZR treatment, 167 patients (36.3%) took newly prescribed medications. One patient (0.2%) and

seven patients (1/5%) exhibited do-not-co-administer and potential interaction with EBR/GZR, respectively. In short, DDI was limited in treatment with EBR/GZR.

FDG PET/CT in critically ill patients with suspected infection

Nuclear imaging, including gallium scintigraphy and fluorodeoxyglucose (FDG) positron emission tomography (PET), is widely used to identify focus of infection in patients with fever of unknown origin. However, its role in critically ill patients remains largely unknown. Huang et al.[6] evaluated the diagnostic performance of FDG PET for suspected infection in critically ill patients by using systematic review. PubMed and Embase were searched to identify studies evaluating the diagnostic performance of FDG PET for finding infection focus in critically ill patients following the PRISMA guidelines. The bivariate mixed-effects model was used to pool the measure for diagnostic performance. Publication bias was evaluated by Deeks' method. A total of 4 studies with 87 patients were included. All the four studies evaluated FDG PET. Majority of the patients were either mechanically ventilated (76%) or shocked requiring vasopressors (61%). Test and transportation related adverse events were rare (2%). The summary sensitivity and specificity were 0.94 (95% CI, 0.79—0.99) and 0.66 (95% CI, 0.45—0.83), respectively. The AUC for summary ROC curve was 0.83. In summary, FDG PET was a sensitive tool with acceptable specificity to detect the origin of infection in critically ill patients. However, further studies should examine the benefit and risk of doing FDG PET in these vulnerable patients.

Risk prediction of Ang-2, vWF, and EVLWI in sepsis patients with ARDS

Ma et al.[7] retrospectively determined the potential effects of angiopoietin-2 (Ang-2), von Willebrand factor (vWF), and extravascular lung water index (EVLWI) on the risk of mortality in 41 sepsis patients with concomitant acute respiratory distress syndrome (ARDS). Data of Ang-2 and vWF levels, EVLWI, and sequential organ failure assessment scores were collected at 0, 24, and 48 h after admission to the hospital. The length of intensive care unit stay (P = 0.041) and Acute Physiology and Chronic Health Evaluation-2 (APACHE II) score (P = 0.003) were associated with the risk of mortality. Furthermore, increased Ang-2 levels and EVLWI at 24 h and 48 h were associated with an increased risk of mortality. Moreover, the APACHE II score at hospital admission significantly predicted the risk of mortality (area under the curve [AUC], 0.834; 95% confidence interval [CI], 0.665—0.983). Finally, the models containing a combination of Ang-2 level and EVLWI at 24 h (AUC, 0.908; 95% CI, 0.774—0.996) and Ang-2 level and EVLWI at 48 h (AUC, 0.981; 95% CI, 0.817—1.000) had high diagnostic values for predicting risk of mortality. Therefore, Ang-2 levels and EVLWI at 24 h and 48 h after admission were significantly associated with the risk of mortality in this special clinical setting.

Suicide and psychosocial correlates among university students in Taiwan

There is an increasing trend of suicide rates among young adults globally. Anny Chen et al.[8] aimed to identify the suicide risks and associated psychosocial factors in a large university in Taiwan. This was a mixed-methods study design using both questionnaire survey and two open-ended questions for the exploration of qualitative data. An online survey was conducted between two periods of the same semester in 2018 to collect different sources of stress and other suicide correlates. The measurement scales included the 9-item Concise Mental Health Checklist, the University Stress Screening Tool in Taiwan and the Chinese Maudsley Personality Inventory. A total of 857 university students were recruited (67.9% female participants). Over a quarter of participants were under poor mental health status and more than 60% experienced stressful events in the prior year. A higher suicide risk and neurotic trait was noticed compared to the general public. In conclusion, neuroticism served as a key element in the increased suicide risk among the university students, despite several risk factors that cumulatively conduced to higher suicide risks. Suicide prevention strategies for university students should highlight stress management for those with neurotic trait and early suicide risk identification.

Root canal system of maxillary first and second molars and the correlations with cone beam computed tomography

In this study, Tzeng et al.[9] used cone-beam computed tomography (CBCT) to analyze the morphology similarity of root canal systems in the maxillary first and second molars. CBCT images of 1741 maxillary molars in a total of 519 patients were blindly examined to analyze the correlation of root canal systems between maxillary first and second molars as well as the bilateral first and second molars. The most common type in maxillary first molars is 3R4C (3 roots/ 4 canals), whereas in maxillary second molars is 3R3C. The symmetry in type of root canals in bilateral maxillary first and second molars were 87.36% and 79.9%, respectively. The similarities of root canal system in adjacent maxillary first and second molars were 53.1% (right side) and 52.6% (left side). The concurrence of MB2 canal in bilateral maxillary first molars is 77.8%, and 36.0% in maxillary second molars. In the 110 patients with MB2 canal in bilateral maxillary second molars, the chance of bilateral MB2 canals in their maxillary first molar is almost 100%. Taken together, maxillary first molars have higher prevalence of 3R4C than second molars. The symmetry in bilateral maxillary molars is higher than the similarity in adjacent maxillary first and second molars. Application of CBCT analysis of root canal system can improve endodontic treatment outcomes.

Screening for diabetes in asymptomatic children

Since most children with type 2 diabetes are asymptomatic, a screening method is required. Wu et al.[10] developed a simple and efficient screening method for children with diabetes. A nationwide survey was conducted, which included 2,270,496 seventh-grade students. Students with two abnormal results in sequential urinalyses were given a fasting blood test. Three screening methods were developed. Among the screening methods, method C is simple, and can be performed by parents, teachers, or school nurses. It suggests children with two abnormal results in sequential urinalyses and who are overweight or have a family history of diabetes receive blood tests. As a result, 0.10% of boys and 0.16% of girls were recommended to receive blood tests, and 7.0% of boys and 6.7% of girls receiving blood tests were diagnosed diabetes. On average, 15,002 boys and 9056 girls had to be screened to find one child with diabetes. The cost per 1000 children by method C was 2466.84 US dollars. Thus urinalysis screening followed by evaluation of risk factors is a simple and efficient way to identify school children with diabetes.

Clinical features of pediatric COVID-19

Coronavirus disease 2019 (COVID-19) in pediatric patients is rare, and its clinical spectrum remains largely unclear. In this study, Chang et al.[11] collected current evidence about COVID-19 in children by performing systematic review. A random effects model was used to pool clinical data in the meta-analysis. A total of 9 case series were included, and most of patients (75%) had a household contact history in the pooled data. The disease severity was mainly mild to moderate (98%). Only 2 children (2%) received intensive care. Fever occurred in 59% of the patients, while cough in 46%. Gastrointestinal symptoms (12%) were uncommon. Of note, 26% children were asymptomatic. The most common radiographic finding was ground glass opacities (48%). Currently, there is no evidence of vertical transmission to neonates born to COVID-19 mothers. In brief, compared with SARS-CoV, SARS-CoV-2 causes less severe disease. In addition, COVID-19 has distinct features in children, with mild disease severity. Current diagnosis is mainly by epidemiological suspicion, contact tracing, and typical ground glass opacities on chest CT.

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