

## 1. Vitamin D

**Vitamin d is anti-microbial:**

**Vitamin D Deficiency in E.N.T. Patients**  
Taneja & Taneja 2013

**There are about 200 viruses apart from *pneumococci*, *meningocci*, and *streptococci*, which can cause common cold and acute otitis media. Most of these pathogens are sensitive to anti-microbials, cathelicidin and defensin released by the body defense mechanism under the influence of vitamin D**

India

**The vitamin D-antimicrobial peptide pathway and its role in protection against infection**  
Gombart 2009

“....The recent discovery that vitamin D induces antimicrobial peptide gene expression explains, in part, the ‘antibiotic’ effect of vitamin D and has greatly renewed interest in the ability of vitamin D to improve immune function. Subsequent work indicates that this regulation is biologically important for the response of the innate immune system to wounds and infection and that deficiency may lead to suboptimal responses toward bacterial and viral infections. The regulation of the cathelicidin antimicrobial peptide gene is a human/primate-specific adaptation and is not conserved in other mammals...”

USA

**The association between vitamin D status and infectious diseases of the respiratory system in infancy and childhood**

Zisi et al 2019

“...The human cathelicidin (LL-37) antimicrobial peptide gene is found to be expressed in neutrophils, monocytes, dendritic cells, lymphocytes, natural killer cells, and epithelial cells of the respiratory and the gastrointestinal tracts [25]. Cathelicidin (LL-37), which has potent antiendotoxin and some direct antimicrobial activity, is effective against methicillin-resistant *S. aureus* (MRSA), which may cause serious illness, such as pneumonia, but also has a broad spectrum of antibacterial activity...”

“....The discovery, moreover, that vitamin D induces antimicrobial peptide gene expression explains, in part, the “antibiotic” effect of vitamin D and has greatly renewed interest in the ability of this vitamin to improve immune function. Current research indicates that this regulation is biologically important for the response of the innate immune system to infection and that deficiency may lead to suboptimal responses to bacterial and viral infections...”

Greece

**Vitamin D and Bronchial Asthma: An overview of the last five years**  
Hal & Agrawal

“...Vitamin D is a potent immunomodulator capable of dampening inflammatory signals in several cell types involved in the asthmatic response. Its deficiency has been associated with increased inflammation, exacerbations and overall worse outcomes in patients with asthma....”

USA

1.  
**Autoimmune Diseases (Dr. Seignalet's Classification)**

**Rheumatoid arthritis**

## **Vitamin D and rheumatoid arthritis**

Kostoglou-Athanassiou et al 2012

“...It appears that vitamin D deficiency is highly prevalent in patients with RA, and that vitamin D deficiency may be linked to disease severity in RA. As vitamin D deficiency has been linked to diffuse musculoskeletal pain, these results have therapeutic implications. Vitamin D supplementation may be needed both for the prevention of osteoporosis as well as for pain relief in patients with RA...”

Greece

## **Exposure to ultraviolet-B and risk of developing rheumatoid arthritis among women in the Nurses' Health Study**

Arkema et al 2013

“...These results suggest that ambient UV-B exposure is associated with a lower RA risk in Nurses Health Study (1976), but not Nurses Health Study 2 (1989). These results suggest that ambient UV-B exposure is associated with a lower RA risk in Nurses Health Study but not Nurses Health Study 2 . Differences in sun-protective behaviours (eg, greater use of sun block in younger generations) may explain the disparate results.I. Differences in sun-protective behaviours (eg, greater use of sun block in younger generations) may explain the disparate results...”

US

## **Vitamin D deficiency in chronic inflammatory rheumatic diseases: results of the cardiovascular in rheumatology [CARMA] study**

“...In summary, patients with RA followed at rheumatology outpatient clinics have high risk of 25(OH)D deficiency, in spite of presenting low-to-moderate disease activity due to tight control of the disease....”

Spain

## **Ankylosing spondylitis (AS)**

Cai et al 2015

## **Vitamin D in ankylosing spondylitis: review and meta-analysis.**

“...Conclusion: The higher levels of serum vitamin D were associated with a decreased risk of ankylosing spondylitis , and showed an inverse relationship with ankylosing spondylitis activity....”

China

## **Psoriasis**

Barrea et al 2017

## **Vitamin D and its role in psoriasis: An overview of the dermatologist and nutritionist**

“...The beneficial effects of vitamin D induced by exposure to sunlight in the treatment of psoriasis have been known for decades..”

Italy

## **Polymyalgia Rheumatica**

Rina & Musa 2019

## **Polymyalgia Rheumatica**

“...Vitamin D and calcium supplementation are routine recommendations for patients on long-term steroid...”

US

### **Autoimmune disease**

Zheng et al 2016

#### **High prevalence of hypovitaminosis D of patients with autoimmune rheumatic diseases in China**

“...In conclusion, low vitamin D status is prevalent in Chinese autoimmune rheumatic diseases patients...”

“...Many experts now believe that Vitamin D (especially with biological activities of 1, 25(OH)2D3) should be considered a hormone rather than one of the conventional nutritional vitamins...”

“...Vitamin D can play a role in regulating immune function, inhibiting inflammatory reactions and autoimmune diseases...”

“....Vitamin D deficiency is associated with chronic disease. Hence, it is challenging to clarify whether vitamin D deficiency is the cause or only the consequence of various chronic diseases....”

China

### **Juvenile idiopathic arthritis**

Finch et al 2018

#### **Vitamin D and juvenile idiopathic arthritis**

“....The data indicate suboptimal vitamin D status in children with chronic arthritis. Further, the association between low vitamin D and increased arthritis activity follow a north-south geographical gradient....”

Canada

Urruticoechea-Arana et al 2015

### **Sjögren syndrome**

#### **Vitamin D and Sjögren syndrome**

Garcia-Carrasco M et al 2017

“...Data suggests that vitamin D may play a role in the SS pathogenesis. In addition, vitamin D low levels have been found in SS patients, which are associated with extra-glandular manifestations, such as lymphoma or neuropathy, suggesting a possible benefit effect of vitamin D in SS....”

Mexico

### **Systemic lupus erythematosus**

Kamen 2010

#### **Vitamin D in Lupus**

#### **New Kid on the Block?**

“....Vitamin D deficiency is highly prevalent and evidence is mounting that it contributes to the morbidity and mortality of multiple chronic diseases, including systemic lupus erythematosus (SLE). Patients with SLE avoid the sun because of photosensitive rashes and potential for disease flare, so **adequate oral supplementation** (*my emphasis*) is critical...”

US

Cutillas-Marco et al 2014

### **Vitamin D and cutaneous lupus erythematosus: effect of vitamin D replacement on disease severity**

“... Conclusions: Vitamin D inadequacy is more prevalent in CLE participants than in healthy controls. Treating vitamin D insufficiency is associated with improved disease severity according to physician and patient assessments....”

Spain

### **Scleroderma**

#### **FGF-23, Klotho and Vitamin D Levels in Scleroderma**

Ahmadi et al 2017

“....Vitamin D and parathyroid hormone (PTH) that play particular functions in calcium and phosphate homeostasis may be involved in the etiology of this disorder....”

Iran

### **Dermatomyositis And Polymyositis**

Cheeti & Panginikkod 2019

### **Dermatomyositis And Polymyositis**

“....Environmental factors: The best known environmental risk factors are drugs, infections, **ultraviolet (UV) light, vitamin D deficiency**, (*my emphasis – use oral supplementation only*) and smoking...”

US

Azali et al 2013

### **Low serum levels of vitamin D in idiopathic inflammatory myopathies**

“....Low serum levels of vitamin D were found in most patients with IIM and may confer a risk factor for developing adult myositis, similar to some other autoimmune diseases....”

Sweden

### **MCTD**

Hajas et al 2011

### **Vitamin D insufficiency in a large MCTD population**

“....Conclusion: The prevalence of vitamin D insufficiency is high in patients with MCTD. We assume that vitamin D insufficiency along with inflammatory parameters and lipid abnormalities may provoke cardiovascular events....”

In summary, we further confirmed that low vitamin D status may increase the risk of Graves' disease.

Hungary

### **Graves' (Basedow's) Disease**

Mei-Yan Xu et al 2015

### **Vitamin D and Graves' Disease: A Meta-Analysis Update**

“....In summary, we further confirmed that low vitamin D status may increase the risk of Graves' disease....”

### **Hashimoto's Thyroiditis**

China

Ucan et al 2016

### **Vitamin D Treatment in Patients with Hashimoto's Thyroiditis may Decrease the Development of Hypothyroidism**

“....Vitamin D deficiency is frequent in Hashimoto's thyroiditis and treatment of patients with this condition with Vitamin D may slow down the course of development of hypothyroidism and also decrease cardiovascular risks in these patients. Vitamin D measurement and replacement may be critical in these patients....”

Turkey

### **Multiple sclerosis**

Pierrot-Deseilligny 2009

### **Clinical implications of a possible role of vitamin D in multiple sclerosis**

“....From a purely medical point of view, vitamin D supplementation appears in this light to be unavoidable in order to improve the general state of these patients. Furthermore, it cannot currently be ruled out that this supplementation could also be neurologically beneficial....”

France

Holmøy et al 2012

### **Vitamin D supplementation and monitoring in multiple sclerosis: who, when and wherefore**

“...Observational studies suggest that increasing the serum concentration of 25-hydroxyvitamin D with 50 nm could halve the relapse risk in relapsing-remitting multiple sclerosis (MS)....”

Norway

### **Celiac disease**

Tavakkoli et al 2013

### **Vitamin D status and concomitant autoimmunity in celiac disease**

“...conclusions: Vitamin D deficiency in CD is common but does not predict AD. The risk of psoriasis is increased in vitamin D-deficient CD patients. Assessment of vitamin D seems to be a high-yield practice, especially in those CD patients who present with anemia....”

US

### **Autoimmune hepatitis**

Ebadi et al 2019

### **Severe vitamin D deficiency is a prognostic biomarker in autoimmune hepatitis**

“...CONCLUSIONS:

Severe vitamin D deficiency is associated with treatment non-response, progression to cirrhosis, and liver-related death or need for Liver Transplantation. Severe vitamin D deficiency is a prognostic biomarker in Auto Immune Hepatitis.

Canada

### **Primary biliary cirrhosis**

Agmon-Levin et al; 2015

### **Vitamin D in primary biliary cirrhosis, a plausible marker of advanced disease**

“...In conclusion, low vitamin D levels are common among patients with PBC and correlate with advanced disease, lack of UDCA therapy and autoimmune comorbidity....”

Israel

### **Primary sclerosing cholangitis**

Fialho et al 2015

### **The presence of primary sclerosing cholangitis in patients with ileal pouch anal-anastomosis is associated with an additional risk for vitamin D deficiency**

“...Conclusion: The presence of Primary Sclerosing Cholangitis was found to be an independent risk factor for vitamin D deficiency in Ulcerative patients with ileal pouch-anal anastomosis. These patients should be routinely screened and closely monitored for vitamin D deficiency....”

US

### **Pemphigus Vulgaris**

Zarei et al 2014

### **Evaluation of Vitamin D Status in Newly Diagnosed Pemphigus Vulgaris Patients**

Pemphigus Vulgaris patients had significantly lower serum level of 25(OH)D compared to healthy subjects which might contribute to worsen the disease. **These data indicate the importance of improving vitamin D level in pemphigus patients.**

Iran

### **IgA nephropathy**

Xiao-Hua Li 2016

### **Vitamin D deficiency may predict a poorer outcome of IgA nephropathy**

‘...A 25(OH)D (*Chris: vitamin d*) deficiency at baseline is significantly correlated with poorer clinical outcomes and more severe renal pathological features, and low levels of 25(OH)D at baseline were strongly associated with increased risk of renal progression in IgA nephropathy....’

China

### **Acute Anterior Uveitis**

Dadaci Z et al 2017

### **Serum Vitamin D Levels in Patients with Acute Anterior Uveitis**

“....CONCLUSIONS:

We found significantly low serum levels of vitamin D in patients with Acute Anterior Uveitis, which suggest that vitamin D deficiency may play a role in the pathogenesis of anterior uveitis. ...”

Turkey

### **Peripheral diabetic neuropathy**

Ghadiri-Anari et al 2019

### **Dose vitamin D supplementations improve peripheral diabetic neuropathy? A before-after clinical trial**

**“...CONCLUSION:**

Oral supplementation of vitamin D 3 (50,000 IU) once weekly for 12 weeks was associated with improvement in the serum level of vitamin D and significant decrease in the symptoms and sign of diabetic neuropathy. So serum vitamin D level should be checked in persons with diabetic neuropathy and low levels of it should be corrected in order to reducing neuropathy severity....”

Iran

### **Granulomatosis with Polyangitis**

Zimba 2017

### **VITAMIN D DEFICIENCY IN PATIENTS WITH GRANULOMATOSIS WITH POLYANGITIS**

“...Conclusion: One of the most significant findings to emerge from this study is that vitamin D deficiency is common in Granulomatosis with Polyangitis. In addition, the evidence from this study suggests that vitamin D deficiency may contribute to heightened inflammation in patients with .Granulomatosis with Polyangitis.”

Ukraine

### **Addison’s Autoimmune**

### **Vitamin D and endocrine disorders: routine laboratory diagnostic implications**

Muscogiuri1 and Bhattoa 2018

“...Although vitamin D levels comparing controls and Addison’s disease patients are not available, the association between vitamin D status and susceptible gene loci may allow one to presume the vitamin’s disease modifying role....”

Italy

### **Clogging Diseases (Dr. Seignalet’s Classification)**

### **Fibromyalgia**

### **The relation between vitamin D deficiency and fibromyalgia syndrome in women**

Matthana 2011

“...CONCLUSION:

Vitamin D deficiency has to be considered in the management of fibromyalgia syndrome...”

de Carvalho et al 2018

### **Vitamin D Supplementation Seems to Improve Fibromyalgia Symptoms: Preliminary Results**

“...(72.2%) responded that they experienced a very significant improvement in symptoms...”

“...CONCLUSIONS:

The 25(OH)D levels and disease symptoms in patients with fibromyalgia and vitamin D deficiency/insufficiency seem to improve with vitamin D supplementation....”

Saudi Arabia

### **Rotator cuff injury**

Dougherty et al 2016

### **Vitamin D and the immunomodulation of**

“...Sufficient or increased levels of vitamin D in patients correlate with an increase in the size, number, and strength of type II muscle fibres...”

Laslett et al 2014

### **Moderate vitamin D deficiency is associated with changes in knee and hip pain in older adults: a 5-year longitudinal study**

#### **CONCLUSIONS:**

Moderate vitamin D deficiency independently predicts incident, or worsening of, knee pain over 5 years and, possibly, hip pain over 2.4 years. Therefore correcting moderate vitamin deficiency may attenuate worsening of knee or hip pain in elderly people

Australia

#### **Osteoarthritis**

#### **Vitamin D and Its Effects on Articular Cartilage and Osteoarthritis**

Garfinkel et al 20017

“....On a molecular level,  $1\alpha,25(\text{OH})_2\text{D}_3$ , the activated form of vitamin D, plays a role in articular cartilage degeneration. Vitamin D binds to vitamin D receptors, triggering a signaling cascade that leads to chondrocyte hypertrophy. In clinical trials, vitamin D deficiency poses a risk factor for OA, and those with decreased cartilage thickness are more likely to be vitamin D–insufficient....”

USA

#### **Osteoporosis**

Lips & van Schoor 2011

#### **The effect of vitamin D on bone and osteoporosis**

“..The main effect of the active vitamin D metabolite  $1,25(\text{OH})_2\text{D}$  is to stimulate the absorption of calcium from the gut. The consequences of vitamin D deficiency are secondary hyperparathyroidism and bone loss, leading to osteoporosis and fractures, mineralization defects, which may lead to osteomalacia in the long term, and muscle weakness, causing falls and fractures....”

Netherlands

#### **Gout**

(Chris's note: *Hyperuricemia is elevated levels of uric acid in the blood. It leads to gout.*)

Peng et al 2013

#### **Association between Vitamin D Insufficiency and Elevated Serum Uric Acid among Middle-Aged and Elderly Chinese Han Women**

“...Vitamin D insufficiency was significantly associated with elevated uric acid among postmenopausal Chinese Han women. This study suggested that a clinical trial should be conducted to confirm the association of vitamin D insufficiency with hyperuricemia...”

China

#### **Migraine**

#### **Effect of Vitamin D Deficiency on the Frequency of Headaches in Migraine**

Song et al 2018

“,,Our study found that the number of monthly days with headache was associated with serum vitamin D deficiency. Despite of the limitation of small samples in the subgroup analysis, this association was consistently noted among females, episodic migraine patients, and chronic migraine patients. Previous studies found that the frequency of headache attack tended to increase in winter and decrease in summer, which is consistent with the seasonal variation of serum vitamin D levels...”

Korea

### Tension Headaches

#### Vitamin D Deficiency in Patients With Chronic Tension-Type Headache: A Case-Control Study

Prakash et al 201

“...The serum 25(OH) D levels were significantly lower in Chronic Tension Type Headache patients than in the controls..”

India

### Autism

#### Vitamin D and Autism, What's New?

Cannell 2017

“...An increasing amount of evidence points to the possibility that gestational and early childhood vitamin D deficiency [25(OH)D < 40 ng/ml] cause some cases of autism...”

“...In terms of prevention, a recent small study showed vitamin D supplementation during pregnancy (5000 IU/day) and during infancy and early childhood (1000 IU/day) significantly reduced the expected incidence of autism in mothers who already had one autistic child from 20% to 5%....”

“....Two open label trials found high dose vitamin D improves the core symptoms of autism in about 75% of autistic children. A few of the improvements were remarkable. The vitamin D doses used in these children were 300 IU/KG/day up to a maximum of 5000 IU/day (highest final 25(OH)D level reached was 45 ng/ml)...”

USA

### Depression

#### Effects of Vitamin D Supplementation on Symptoms of Depression in Overweight and Obese Subjects: Randomized Double Blind Trial

Jorde et al 2008

“ ...Conclusions: There appears to be a relation between serum levels of 25(OH)D and symptoms of depression. Supplementation with high doses of vitamin D seems to ameliorate these symptoms indicating a possible causal relationship...”

Norway

### Alzheimers

#### Vitamin D and the risk of dementia and Alzheimer disease

Littlejohns et al 2014

“....Our results establish that low 25(OH)D (*vitamin d*) concentrations are linked to an increased risk of incident all-cause dementia and AD, and they are consistent with studies suggesting a link with cognitive impairment and cognitive decline....”

USA

### Parkinson's Disease

#### Vitamin D Status and Parkinson's Disease: A Systematic Review and Meta-Analysis

Zheng et al 2014

“...Patients with vitamin D deficiency [25(OH)D level <50 nmol/l] experienced a twofold increased risk of Parkinson’s Disease. Low vitamin D levels are associated with an increased risk of PD....”

China

### **Diabetes mellitus type 2**

#### **Vitamin D and glycemic control in diabetes mellitus type 2**

Kostoglou-Athanassiou 2013

“...Vitamin D levels appeared to be lower in diabetes mellitus type 2 patients than in the control group, vitamin D levels being related to glycemic control in diabetes mellitus type 2....”

#### **Glycemic changes after vitamin D supplementation in patients with type 1 diabetes mellitus and vitamin D deficiency**

Alijabri et al 2010

“....There was an observed effect of vitamin D supplementation on glycemic control in vitamin D-replete, type 1 diabetes mellitus patients....”

Greece

### **Hypoglycemia**

#### **Effect of Vitamin D Supplementation on Serum Lipid Profiles: A Systematic Review and Meta-Analysis**

Dibaba 2019

“....**Conclusions:** Vitamin D supplementation appeared to have a beneficial effect on reducing serum total cholesterol, LDL cholesterol, and triglyceride levels but not HDL cholesterol levels...”  
*(Chris's note: LDL is “bad cholesterol”, HDL is “good cholesterol” so vitamin d supplementation reduces the bad cholesterol but has no effect on good cholesterol in this study)*

USA

### **Spasmophilia**

#### **Vitamin D Metabolites in Spasmophilia**

Caracemo et al 1990

“...We conclude that high plasma levels of 25-hydroxyvitamin D play an important role in restoring normal cytosolic free calcium levels and reducing clinical manifestations in spasmophilia...”

Italy

### **Obesity**

#### **Vitamin D in Obesity**

Walsh et al 2017

“....Lower vitamin D in obese people is a consistent finding across age, ethnicity, and geography. This may not always reflect a clinical problem. Obese people need higher loading doses of vitamin D to achieve the same serum 25-hydroxyvitamin D as normal weight....”

UK

### **Angina**

## **Effect of Vitamin D on Anginal Episodes in Vitamin D Deficient Patients with Chronic Stable Angina on Medical Management**

Sagarad et al 2016

“....Cardiovascular patients need to be evaluated for Vitamin D deficiency. Supplementation to correct Vitamin D levels may have additional cardiovascular benefits like reduction in angina episodes....”

India

### **Arteritis and Vasculitis**

#### **Vitamin D Levels in Takayasu's Arteritis and a Review of the Literature on Vasculitides**

Alibaz-Oner

“...**Conclusion:** We observed a high prevalence of vitamin D deficiency in patients with TAK. As various immune effects of vitamin D on mononuclear cells and arterial endothelium is shown, vitamin D deficiency can be a predisposing factor for immune activation in SV. We therefore suggest monitorization and replacement of vitamin D status in all TAK and other SV patients...”

Turkey

#### **A Case-Control Study of the Association between Vitamin D Levels and Gastric Incomplete Intestinal Metaplasia**

Singh et al 2018

“...vitamin D may be a relatively simple intervention to prevent the development and progression of gastric adenocarcinoma and should be pursued in interventional trials, not least because other antioxidants such as ascorbic acid and  $\beta$ -carotene have been shown to be effective for chemoprophylaxis for gastric adenocarcinoma in patients with intestinal metaplasia...”

USA

### **TB**

#### **Low vitamin D levels were associated with a 5-fold increased risk for progression to tuberculosis.**

Talat et al 2010

Low vitamin D levels were associated with a 5-fold increased risk for progression to tuberculosis.

Pakistan

### **Lithiasis (Kidney Stones)**

#### **Vitamin D Repletion in Kidney Stone Formers: A Randomized Controlled Trial**

Feroni et al 2017

“....**Conclusions:** High dose and low dose vitamin D repletion had no effect on urine calcium excretion or the supersaturation of calcium salts in known stone formers. The higher dosing regimen, which had superior repletion, may be the optimal protocol in patients with vitamin D deficiency....” (Chris’s note: the “higher dosing regimen” was 50,000 iu’s)

USA

### **Glaucoma**

#### **The Relationship between Vitamin D and Glaucoma: A Kangbuk Samsung Health Study**

Kim et al 2016

“....Lower 25(OH) D level was significantly associated with an elevated risk of glaucoma in females compared with higher 25(OH)D level. Further evaluation is needed to investigate the relationship between glaucoma and vitamin D....”

Korea

### Lung Disease

**Vitamin D predicts disease progression in patients with pulmonary fibrosis and blunts in-vitro fibrotic responses**

Tzilas et al 2018

“...Conclusions: VitD could serve as a prognosticator and potential therapeutic target in patients with fibrotic ILDs. Further studies are needed...”

Greece

### Fatigue

**Correction of Low Vitamin D Improves Fatigue: Effect of Correction of Low Vitamin D in Fatigue Study**

Roy et al 2014

“...Prevalence of low vitamin D was 77.2% in patients who presented with fatigue. After normalization of vitamin D levels fatigue symptom scores improved significantly in all five subscale categories of fatigue assessment questionnaires....” (*Chris's note: patients were given 50.000 iu's 3 times a week for 5 weeks*)

USA

### Cancer

**The Role of Vitamin D in Cancer Prevention**

Garland et al 2006

“...The majority of studies found a protective relationship between sufficient vitamin D status and lower risk of cancer. The evidence suggests that efforts to improve vitamin D status, for example by vitamin D supplementation, could reduce cancer incidence and mortality at low cost, with few or no adverse effects...”

“....A recent survey found, for example, that 42% of Black women had seriously deficient 25(OH)D levels...”

USA

### Leukemia

**High Prevalence of Vitamin D Deficiency in Newly Diagnosed Acute Myeloid Leukemia Patients and Its Adverse Outcome**

Seyedalipour et al 2017

“...Conclusion: The results of the study showed that serum 25(OH)D levels deficiency was highly prevalent among Iranian Acute Myeloid Leukemia patients. Furthermore, higher Vit D levels in AML patients were associated with better outcome in these patients....”

Iran

### Elimination Diseases (Dr. Seignalet's Classification)

**Inflammatory bowel disease (IBD) - Colitis & Crohn's**

## **Vitamin D deficiency associated with Crohn's disease and ulcerative colitis: a meta-analysis of 55 observational studies**

Li et al 2019

“...Serum levels of 25(OH)D were lower in patients with CD and UC than in healthy people, and more than half of the patients had insufficient vitamin D levels....”

China

### **Stomach Diseases**

#### **Hypovitaminosis D as Predisposing Factor for Atrophic Type A Gastritis: A Case-Control Study and Review of the Literature on the Interaction of Vitamin D With the Immune System**

Antico et al 2012

“...Vitamin D levels in AIG patients were significantly lower than in patients with nonspecific gastritis or in the general population, supporting the hypothesis that hypovitaminosis D might be a risk factor for the development of autoimmune diseases. The low vitamin D concentration in *H. pylori* gastritis patients might act as predisposing factor for a more severe Th1-type aggression to the stomach epithelium....”

Italy

### **The effect of vitamin D deficiency on eradication rates of *Helicobacter pylori* infection**

El Shahawy et al 2018

“...Our results revealed that eradication was successful in 105 (70%) patients and failed in 45 (30%) patients. The mean 25[OH]D level was significantly lower in the eradication failure group compared to the successful treatment group . Furthermore, there were significantly more patients with deficient 25[OH]D (*vitamin d*) levels in the failed treatment group, 30 (66.6%), compared to the successful group, 10 (9.5%) ...”

Egypt

### **Acne**

#### **Comparison of Vitamin D Levels in Patients With and Without Acne: A Case-Control Study Combined With a Randomized Controlled Trial**

Lim et al 2016

“....**Conclusions:** Vitamin D deficiency was more frequent in patients with acne, and serum 25(OH)D levels were inversely correlated with acne severity, especially in patients with inflammatory lesions.

Korea

### **Eczma**

#### **Vitamin D Status and Efficacy of Vitamin D Supplementation in Atopic Dermatitis: A Systematic Review and Meta-Analysis**

Kim et al 2016

“...In conclusion, this meta-analysis summarized the evidence for the role of vitamin D in AD patients. Serum 25(OH)D level was lower in the AD patients than in the controls, and the subgroup analysis showed that the difference in serum 25(OH)D level was significant in the pediatric patients. In addition, in comparison with a placebo group, vitamin D supplementation decreased AD severity and improved the symptoms and clinical signs of AD. However, the specific mechanisms underlying the role of vitamin D in this relationship are still unclear....”

Korea

## Hives

### Vitamin D Deficiency in Chronic Idiopathic Urticaria

Movahedi et al 2015

“...Vitamin D deficiency was significantly associated with increased susceptibility to chronic idiopathic urticaria. There was a significant positive correlation between vitamin D levels and urticaria activity score. This study showed that patients with chronic idiopathic urticaria had reduced levels of vitamin D, while vitamin D deficiency could increase susceptibility to chronic idiopathic urticaria....”

Iran

## Psoriasis

### Association between psoriasis and vitamin D: Duration of disease correlates with decreased vitamin D serum levels

Filoni et al 2018

“...Vitamin D levels were significantly different among the 3 groups. Psoriatic patients had significantly lower serum levels of 25(OH)D (*vitamin d*) (21.8 ng/mL) than healthy controls (34.3 ng/mL). Patients with bullous diseases showed the lowest vitamin D mean values (18.2 ng/mL). The linear multiple regression model showed 25(OH)D levels to be influenced by age, season of blood vitamin D levels assessment, and psoriasis duration....”

Italy

## Pruritis

### Idiopathic Itch, Rash, and Urticaria/Angioedema Merit Serum Vitamin D Evaluation: A Descriptive Case Series

Goetz 2011

“...Conclusion: This retrospective case-series, with a 70% (40/57) vitamin D treatment success, suggests that vitamin D status should be assessed in patients with idiopathic cutaneous symptoms. If vitamin D is low, symptom resolution is often possible with oral supplementation of vitamin D. Controlled clinical studies are required to confirm these associations....”

USA

## Asthma

### Vitamin D and Bronchial Asthma: An overview of the last five years

Hal & Agrawal 2017

“...Vitamin D is a potent immunomodulator capable of dampening inflammatory signals in several cell types involved in the asthmatic response. Its deficiency has been associated with increased inflammation, exacerbations and overall worse outcomes in patients with asthma....”

USA

**There are about 200 viruses apart from *pneumococci*, *meningocci*, and *streptococci*, which can cause common cold and acute otitis media. Most of these pathogens are sensitive to anti-microbials, cathelicidin and defensin released by the body defense mechanism under the influence of vitamin D**

## ENT Infections

### Vitamin D Deficiency in E.N.T. Patients

Taneja & Taneja 2012

“...There are about 200 viruses apart from *pneumococci*, *meningocci*, and *streptococci*, which can cause common cold and acute otitis media. Most of these pathogens are sensitive to anti-microbials, cathelicidin and defensin released by the body defense mechanism under the influence of vitamin D....”

India

### Chronic Sinusitis

**Vitamin D deficiency is associated with increased human sinonasal fibroblast proliferation in chronic rhinosinusitis with nasal polyps**

Carroll et al 2016

“...Patients with chronic rhinosinusitis with nasal polyps (CRSwNP) have been shown to be Vitamin D3 deficient. Moreover, VD3 deficiency is associated with worse disease in patients with CRSwNP....”

USA

### Angioedema

**Idiopathic Itch, Rash, and Urticaria/Angioedema Merit Serum Vitamin D Evaluation: A Descriptive Case Series**

“...**Methods:** A retrospective case series of 63 patients describes an association of pruritus, rash, and urticaria/angioedema with low 25-hydroxyvitamin D ( $25[\text{OH}]D < 32 \text{ ng/mL}$ ). The 90% (57/63) of patients with low vitamin D were treated with 8 to 12 weeks of vitamin D 50,000 IU weekly followed by daily supplementation. Concurrent diagnoses were treated routinely. Complete resolution of cutaneous symptoms defined response...”

USA

### Mouth Ulcers (“Canker sores” US) aphthous stomatitis

**Vitamin D levels in patients with recurrent aphthous stomatitis**

Oztekin & Oztekin 2018

“...Conclusions

The present study showed lower vitamin D levels in patients with recurrent aphthous stomatitis compared to healthy controls....”

Turkey

### Cutaneous Mastocytosis

**Vitamin D Contributes to Mast Cell Stabilization**

Liu et al 2017

“....**Conclusions:** The data demonstrate that VitD is required to maintain the stability of mast cells. The deficiency of VitD results in mast cell activation....”

China and Canada

### List of Affiliated Countries in Researches

Countries	Total Number of Researches Done
Australia	1
Canada	3

China	8
Egypt	1
France	1
Greece	3
Hungary	1
India	4
Iran	5
Israel	1
Italy	5
Korea	4
Mexico	1
Netherlands	1
Norway	2
Pakistan	1
Saudi Arabia	1
Spain	2
Sweden	1
Turkey	4
Ukraine	1
UK	1
USA	19