



ENT NEWSBUZZ

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Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring you “**ENT NEWSBUZZ**” which contains latest and interesting news.

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Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Ltd



Potential relationships between serum vitamin D level and the risk of Otitis Media

Vitamin D is an important nutrient required by the human body. It is not only considered as an essential element, but also known as regulatory element required in calcium and phosphate metabolism.¹ Vitamin D receptors are present in tissues like lymphocytes, kidneys, ovaries, stomach, thymus, pancreas, skin, and parathyroid glands that is why it has been considered as a steroid hormone.¹ Different types of vitamin D are: cholecalciferol, calcidiol (25-hydroxyvitamin D) and calcitriol (1,25-dihydroxy vitamin D). Deficiency of vitamin D leads to the development of various communicable and non-communicable diseases like ear diseases, bone pain, arthralgias, myalgias, weariness, muscular twitching, and weakness, cancer, cardiovascular diseases, rheumatoid arthritis.^{1,2} Deficiency of vitamin D is commonly reported throughout the globe, around 1 billion people worldwide are affected with vitamin-D deficiency.² Though, Sunlight is the only source of vitamin D, there are various other factors like fatty fish, fish liver oil, and egg yolk linked with maintaining a normal level of vitamin D.¹ However, alongside sunlight exposure, factors like skin color, age, comorbid condition are also considered as modulating factors to explain variations of vitamin D levels, among people.² Otitis media is an inflammation of the middle ear most commonly seen in paediatric patients. According to research, administration of vitamin D along with other common treatments, is a good option for treating upper respiratory tract infections like Otitis Media as Vitamin D acts by reducing the inflammation.

Vitamin D deficiency was associated with the etiopathology of ear diseases

A study aimed to determine the potential relationships between Otitis media and serum vitamin D level and assessed the importance of vitamin D supplementation for the treatment and prevention of Otitis Media. After extracting data from PubMed, EMBASE, Google Scholar, Web of Science, and the Cochrane Database, a systematic review was conducted. Selection of the article focused on the titles and abstracts in English language. Those articles not directly addressing the subject of interest were excluded from the analysis and duplicate titles were removed too. Around 55 articles were finalized based on their titles and abstracts were reviewed.



Fig:1 Forest plot of the number of participants with sufficient plasma vitamin D level by disease type (AOM vs. COM). AOM, acute otitis media, COM: chronic otitis media, SD: standard deviation, CI: confidence interval

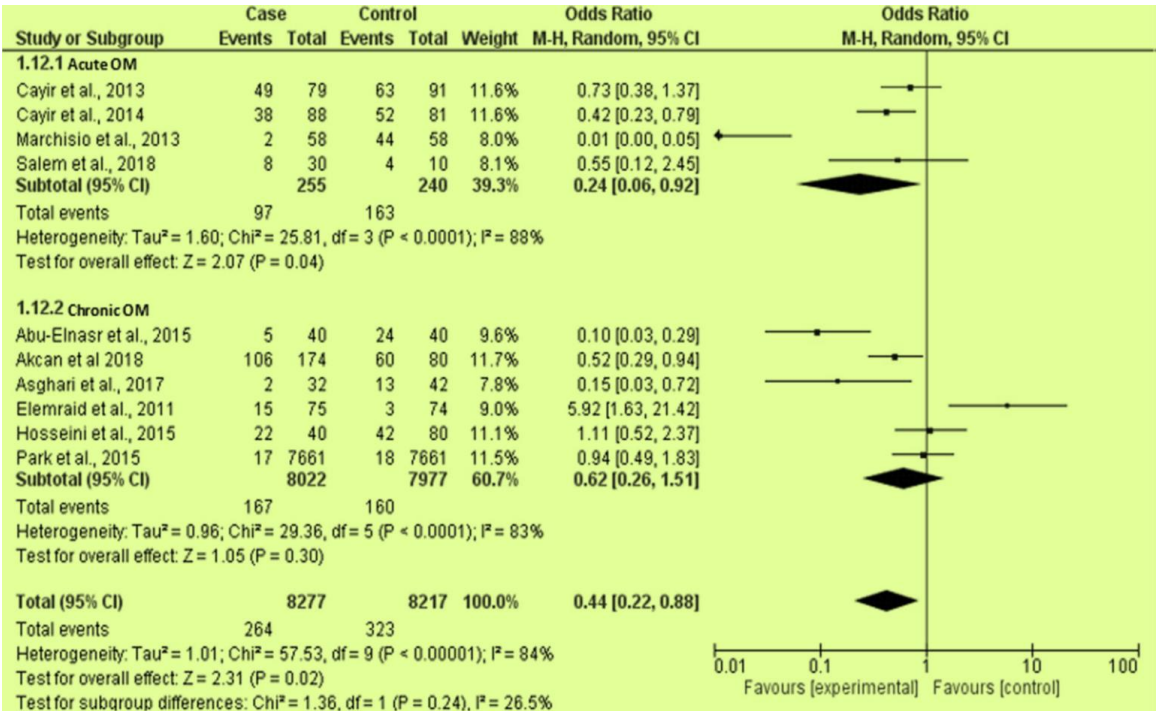
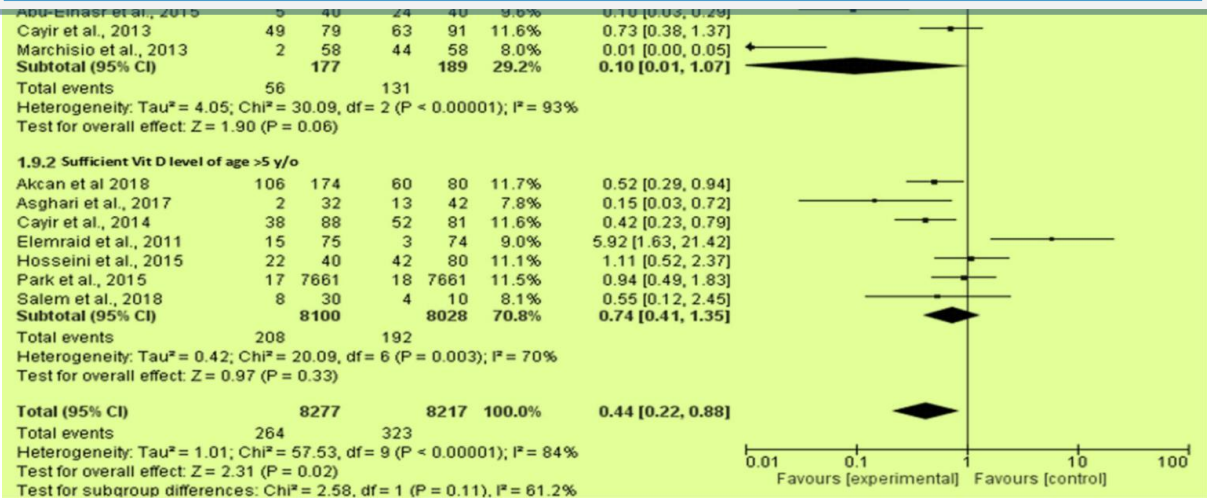


Fig:2 Forest plot of the numbers of participants with sufficient plasma vitamin D level according to age group (≤ 5 vs. > 5 years)





Result of the study showed that the serum vitamin D levels of patients with acute otitis media and chronic otitis media were significantly lower than those in the control group (Fig:1). According to a case study, high level of vitamin D was seen among patients with chronic otitis media compared to the control group, while other case study revealed that no significant difference in vitamin D level between patients with chronic otitis media and the control group was observed. A significant association with lower vitamin D level was observed in Children aged ≤ 5 years with otitis media compared to the control group (Fig:2). However, the age group differences, revealed that children aged ≤ 5 years had significantly lower vitamin D levels than those aged > 5 years, which clearly indicated that children (≤ 5 years) with otitis media had lower level of vitamin D. The subgroup analysis for both disease types and age groups revealed that a small number of patient with otitis media had sufficient vitamin D levels.

In Patient suffering with ear, nose and throat disease, vitamin D deficiency seems to be common, for which vitamin D supplementation shows excellent results. This study highlighted that in both adults and children, vitamin D deficiency was associated with the etiopathology of ear diseases for which empirical supplementation of vitamin D is recommended

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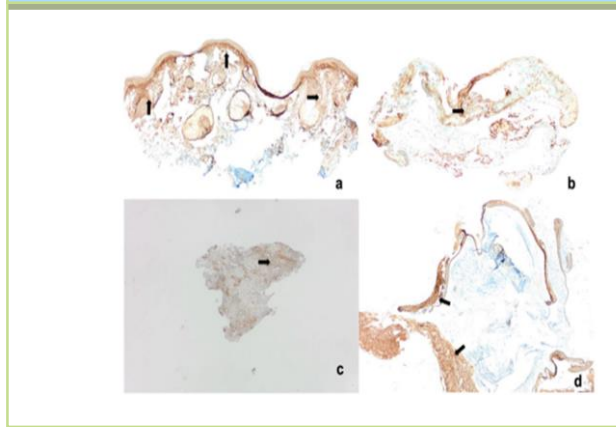


Periostin and fibronectin used as a biomarker in the diagnosis and treatment of chronic otitis media with cholesteatoma

Disease condition like Chronic otitis media and chronic otitis media with cholesteatomas are the commonly faced health problems by the population in both underdeveloped and developing countries¹. Chronic otitis media is a persistent inflammation of the middle ear characterised by recurrent or persistent ear discharge through a perforation of the tympanic membrane for at least 2 to 6 weeks¹. Formation of Chronic otitis media starts as a complication of persistent acute otitis media with perforation in childhood.² Invasion, squamous metaplasia, basal cell hyperplasia and retraction pocket theory are the considered theories behind the formation of cholesteatoma.¹ According to studies, disorder in the epidermal growth factor receptor (EGFR) plays an important role in the development of cholesteatoma.⁴ Heparin-binding epidermal growth factor (HB-EGF) binds to the epidermal growth factor receptor (EGFR) and participates in cell proliferation, that is why, HB-EGF is more expressed in cholesteatoma tissue than in normal skin.¹ Extracellular proteins involved in the formation of cholesteatoma and chronic otitis media includes Periostin, fibronectin and tenascin-C.¹ Periostin (osteoblast-specific factor2) is a matricellular protein involved in fibrogenesis and cell adhesion, differentiation and death while fibronectin is a glycoprotein found in most of the tissues involved in various cell-matrix interactions, inflammation, fibrosis, wound-healing, embryogenesis, haemostasis and angiogenesis. On the other hand, Tenascin-C is a hexameric glycoprotein involved in the regulation of cell migration, adhesion and growth of the cell. Besides that, Tenascin-C plays an important role in mesenchymal transitions, cell migration in embryonic tissues, wound healing, fibrosis and tumorigenesis.¹

Periostin and fibronectin plays an important role in the development of cholesteatoma.

Fig:4 Periostin: a. Outer ear canal skin: epithelial staining score +, stroma ++. b. Avivation tissue: no epithelial staining score, stroma +. c. Granulation tissue: no epithelial staining score, stroma ++++. d. Cholesteatoma tissue: epithelial staining score +++, stroma +++++



A study aimed to determine the levels and role of periostin, fibronectin and tenascin-C in patient with Chronic otitis media and cholesteatoma and enrolled 80 participants, out of which 65 were surgery undergoing Chronic otitis media patients and 15 healthcare personnel volunteers serving as controls. Participants were further divided into 4 groups: cholesteatoma,



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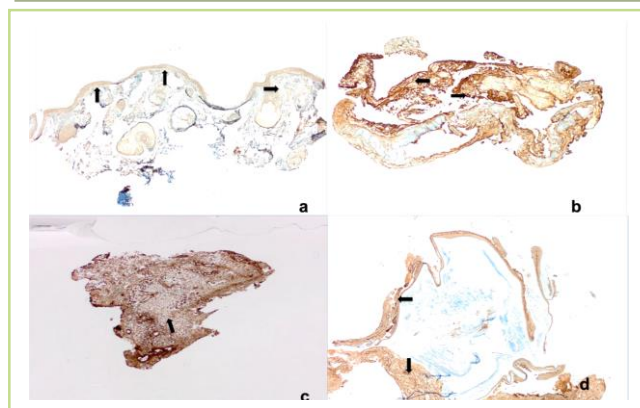
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granulation, avivation and control group. All the participants underwent test to determine serum periostin, fibronectin and tenascin-C levels. In the control group, histopathological evaluation of tissue samples and 20 skin samples were performed. Descriptive statistical methods were used along with the chi-square test to compare qualitative data while one-way analysis of variance was used to compare quantitative data.

Of the total enrolled patients, 22 patients were observed with cholesteatoma, 15 with granulation tissue while other 28 with the edge of the tympanic membrane perforation freshening tissue. Almost, 22 patients underwent canal wall down tympanoplasty, 16 underwent canal wall up tympanoplasty, and 27 underwent endoscopic tympanoplasty. In terms of serum periostin, fibronectin and tenascin-C levels, no significant differences were found between the groups.

Cholesteatoma samples were significantly more strongly stained when compared to other groups, in terms of epithelial periostin staining (**Fig:5**). Similarly, in stromal periostin staining, more intense staining was observed in the cholesteatoma group. Epithelia and stroma were significantly more strongly stained in the cholesteatoma group, in terms of fibronectin staining (**Fig 6**). Likewise, in tenascin-C, stromal staining was significantly less intense in the skin sample group compared to the other groups.

Fig:5 Fibronectin: a. Outer ear canal skin: epithelial staining score +, stroma +. b. Avivation tissue: no epithelial staining score, stroma +++. c. Granulation tissue: no epithelial staining score, stroma +++. d. Cholesteatoma tissue: epithelial staining score +++, stroma ++++



This study concluded that periostin and fibronectin levels were increased in cholesteatoma tissue when compared to other forms of chronic otitis media and skin samples, which clearly indicates that periostin and fibronectin plays an important role in the development of cholesteatoma.

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Fasting time and its impact on the post-operative complications following Adenotonsillectomy in pediatric patients

The rationale for preoperative fasting is to allow sufficient time for gastric emptying, and prevent aspiration to the lungs during general anesthesia.¹ There are guidelines recommending the fasting time of children before anesthesia, but, it is usually difficult to control.² For pediatric patients, prolonged fasting time before surgery will lead to dehydration and hypoglycemia.³ Surgery and postoperative recovery process of the patients can be affected because of the Prolonged preoperative fasting leading to reduction of body fluid that may again causes various intraoperative complications, such as increased blood loss, electrolyte imbalance, and hypoglycaemia¹. Adenotonsillectomy is a common otolaryngology surgery. Nausea and vomiting are the most common complications of this procedure with a prevalence ranging from 49% to 73 %.⁴

Occurrence of post-operative complications such as, vomiting and pain are directly proportional to the duration of pre-operative fasting, leading to prolonged post-operative hospital stay and increased medical expenses.

A study aimed to assess the impact of pre-operative fasting time on post-operative complications in pediatric patients undergoing adenotonsillectomy. A retrospective analysis of the medical-surgical records of patients who underwent adenotonsillectomy was done. A total of 480 pediatric patients were divided into three groups, namely- tonsillectomy, adenoidectomy and adenotonsillectomy groups. The impact of fasting time on the post-operative complications was analyzed using logistic regression analysis. For the analysis of difference between two groups in continuous variable, student's t-test was used while chi-square analysis was used for categorical variables.¹



Table: 1 Logistic regression analysis of fasting time and postoperative hospital stay in three groups

Variable	Category	Postoperative hospital stays (≤ 4 days)	Postoperative hospital stays (>4 days)	COR (95%CI)	AOR (95%CI)	P
Fasting time in adenoidectomy group (minute)	≤ 565	76 (72.38%)	24 (48.00%)	1	1	.005
	>565	29 (27.62%)	26 (52.00%)	2.84 (1.41–5.72)	3.38 (1.59–7.19)	
Fasting time in tonsillectomy group (minute)	≤ 565	55 (71.43%)	2 (4.65%)	1	1	<.001
	>565	22 (28.57%)	41 (95.35%)	51.25 (11.4–230.37)	63.93 (13.42–304.48)	
Fasting time in adenotonsillectomy group (minute)	≤ 565	85 (69.11%)	3 (3.66%)	1	1	<.001
	>565	38 (30.89%)	79 (96.34%)	58.9 (17.48–198.46)	62.61 (18.33–213.86)	

COR: crude odds ratio; AOR: adjusted odds ratio; CI: confidence interval.

The median fasting time was recorded 565. Statistical analysis showed a positive correlation between the pre-operative fasting time and post-operative hospital stay in all the three groups. Positive correlation was also seen between the fasting time and post-operative vomiting as well as post-operative pain in all the three groups. Whereas, no significant difference was observed in post-operative cough and bleeding with change in fasting time, in all three groups (**Table 1**)

This study highlights that the actual fasting time was much higher than the recommended time in the concerned hospital, which may be due to medical staff, parents and families or the arrangement of operating rooms. The findings of this study suggests that occurrence of post-operative complications such as, vomiting and pain are directly proportional to the duration of pre-operative fasting, leading to prolonged post-operative hospital stay and increased medical expenses. This study further suggests a need to form highly optimized pre-operative fasting strategies in order to reduce post-operative complications in paediatric Otolaryngology¹



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Bilateral Vagal Neuropathy associated with COVID-19 disease: A Case Report

COVID-19 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), targets the angiotensin-converting enzyme 2 receptor and infects many organs and causes complications.¹ Though, patients with COVID-19 infections are believed to have 36% of neurological symptoms but, the case of vagal neuropathy with dysphonia has not been reported with COVID-19 disease.¹ According to a multicentre study, incidence of neurological complications in COVID-19 is high and are commonly observed in patients with severe respiratory infection.² Though the pathophysiology of neuropathy is diverse and multifactorial, but neuropathy in COVID-19 infection is assumed as a result of virus entry, and from a systemic inflammatory response resulting in the massive release of inflammatory mediators like cytokines and chemokine.² Major manifestation of COVID-19 related neuropathy includes central nervous system, peripheral nervous system and skeletal muscular manifestations.¹ Common neurological problems like taste and smell impairments are well known to trigger otolaryngological complications as well.³

Though rare, but there can be a possibility of vagal neuropathy with dysphonia in patient with COVID-19

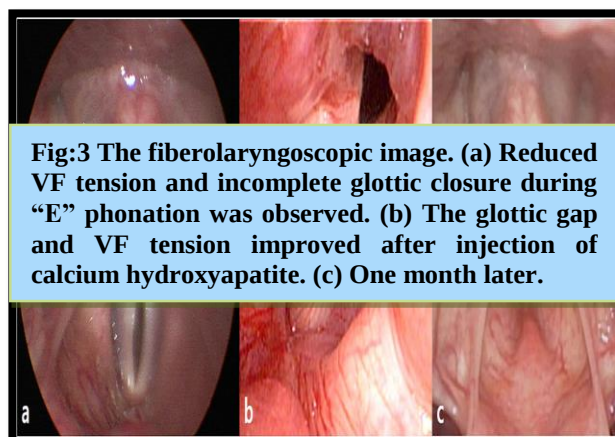


Fig:3 The fiberoptic laryngoscopic image. (a) Reduced VF tension and incomplete glottic closure during "E" phonation was observed. (b) The glottic gap and VF tension improved after injection of calcium hydroxyapatite. (c) One month later.



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An Y et al. has presented a case report in which the patient experienced dysphonia after remission of COVID-19 infection.¹

A 47-year-old female was presented with the history of COVID-19 (3 months before) and was completely recovered, confirmed by negative RT-PCR. Since then, patient started experiencing vocal discomfort and visited otolaryngology outpatient department. Beside covid 19, the patient dined having other medical history. Neither history of intubation nor structural abnormalities on computed tomography of the larynx and hypopharynx was recorded. While performing video stroboscopic examination, decreased in vocal fold tension was noticed along with incomplete glottic closure and a severely breathy voice (**Fig:3**). Neurologic examinations were performed to identify the cause of bilateral vocal cord paresis and serologic tests was done to find out any possibilities of diabetes and autoimmune diseases. To clarify the sarcoidosis, computed tomography of the chest was performed. But, no specific findings were observed. Patient was further asked for Laryngeal electromyography, which revealed the reduction of the bilateral thyroarytenoid and cricothyroid muscles presenting bilateral vagal neuropathy. Patient did not show any improvement, even after the two sessions of voice therapy. Calcium hydroxyapatite 0.5 mL was injected into both vocalis muscles to improve the vocal fold tension and close the glottic gap. After a month of surgery, little improvement was noticed in the glottic insufficiency and Vocal fold tension. Complete improvement was observed in glottic gap and vocal fold tension after 3 months of the surgery and no obstruction was caused by the injected material.

Conclusion: Well-known otolaryngological symptoms observed due to COVID-19 are impairments of taste and smell but dysphonia due to vagal neuropathy is rarely reported. The possibility of vagal neuropathy with dysphonia in COVID-19 patient was observed, one should be carefully and vigilant when such symptoms arises. Appropriate treatment should be considered depending on the severity of symptoms

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