

Management of Medical Emergencies in Dental Practice
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Asthma Status Asthmaticus – Part 1

Hi everyone, first of all, I would like to thank especially the National Problem and Technical Enhanced Learning Committee, which is initiated by the IIT and being supported by Human Resources Development, Government of India. Thanks for taking such a good initiative program, and which is going to be helpful for many of the medical dental surgeons or if some dental surgeons who wants to revive their or update their particular knowledge.

And I would like to thank immensely, Doctor. Jensen, who has taken a lot of pains in doing this in charting of this particular program, and elevating various topics to the experience to maxillofacial surgeons or the dental doctors so that they can give the insights or they can get an advanced knowledge of this particular topic and especially for the dental surgeon, but in general surgeons.

My topic today is asthma in dental office. I am doctor Rajasekhar Dean and Principal Mamata Institute of Dental Sciences, Hyderabad.

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INTRODUCTION

- Asthma is one of the world's most common chronic disease
- Prevalence is increasing in many countries, especially in children
- Asthma is one of the major serious illness in children
- Many cells and cellular elements play an important role in asthma
- Health care expenditure on asthma is escalating

Coming to the introduction, asthma is one of the world's most common chronic disease, when I say one of the most common disease, the other most common disease are hypertension, diabetes, and maybe the thyroid problems and from the respiratory point of view definitely asthma is one of the or one of the primary, the common chronic diseases in the world.

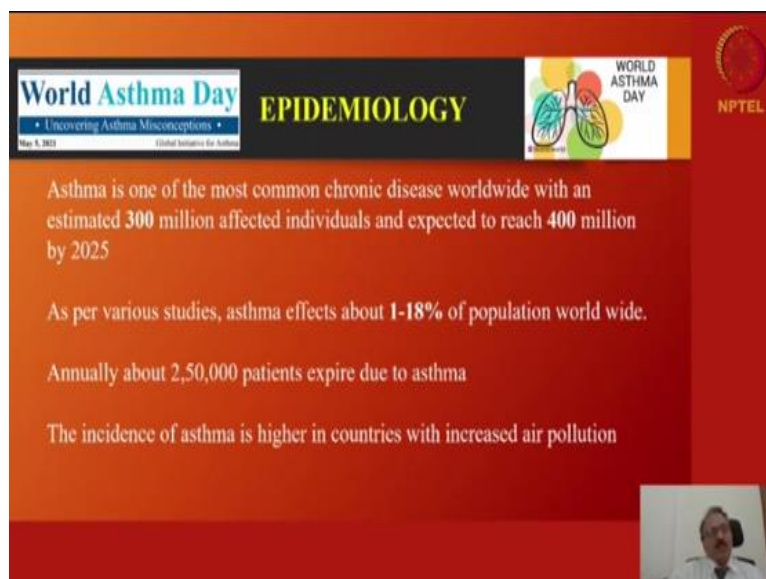
The prevalence is increasing in many countries, it is mainly due to pollution, maybe due to various factors and it is more effective in children, it is, this is a serious illness in children mainly seen because there are a few factors which are responsible, more commonly in children, one is it could be because of premature delivery, which reduces or it is the immune system of the child is not very well developed.

The second, the lungs are not very well developed. And the third maybe there is some sort of genetic factor. Fourth, that maybe because of active or passive smoking during or after pregnancy of this particular child's mother. And also very rarely maybe there can be a passive smoking of the child, probably because of one of the parent who is smoking at home.

These are the reasons which are more recycling this particular condition is enhancing in children and also added to list pollution also is one of the factor and it is not just the respiratory entire system, it is the individual cells and the cellular elements, which play a very important role in causing asthma.

The healthcare expenditure is increasing. Because this particular condition is not that it comes on it goes. It takes, it comes on and off and also you have to spend money on this and you have go for the treatment and this actually instead of this expenditure of putting on asthma, we can ask them use for betterment of our health, betterment of our lifestyle and things like that. But because of various reasons, since this condition is occurring, we have to spend on it, which is causing a lot of annual expenditure for the parents.

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The slide features a red background with white and yellow text. At the top left, there is a logo for 'World Asthma Day' with the tagline 'Uncovering Asthma Misconceptions' and the date 'May 8, 2013'. To its right, the word 'EPIDEMIOLOGY' is written in large, bold, yellow letters. Further right is a graphic of human lungs with the text 'WORLD ASTHMA DAY'. In the top right corner, there is a circular logo with the text 'NPTEL'. The main body of the slide contains four lines of white text providing statistics and facts about asthma. In the bottom right corner, there is a small inset video frame showing a man in a white lab coat and glasses speaking.

World Asthma Day
• Uncovering Asthma Misconceptions •
May 8, 2013 Global Initiative for Asthma

EPIDEMIOLOGY

WORLD ASTHMA DAY

NPTEL

Asthma is one of the most common chronic disease worldwide with an estimated **300 million** affected individuals and expected to reach **400 million** by 2025

As per various studies, asthma effects about **1-18%** of population world wide.

Annually about **2,50,000** patients expire due to asthma

The incidence of asthma is higher in countries with increased air pollution

Coming to little bit of epidemiology which is very, very important, because this is important to know how vastly this particular disease is spreading and how important, how seriously we have to take this particular condition.

And as you all know there are various days fixed to this particular conditions unless until this condition is prevailing in the high manner, the days are not allocated to this particular condition. Example if you say Worlds Aids Day, this is falling for the first December, because the Aids is one of the most dangerous disease and then you know thousands and lakhs of people have been affected by this condition.

So, this first of the December is allocated to Worlds Aids Day. Likewise, Worlds Cancer Day is fourth February. So, even this particular condition is creating a lot of disturbance and a lot of atonate to the individuals. So, a day has been fourth February has been allocated. Similarly, World Diabetic Day, fourteenth November. Likewise, since asthma also is created a lot of disturbance and a lot of trouble, and millions of people are affected worldwide, that is why, May fifth of every year has been allocated as World Asthma Day.

And as I said before, this is one of the most common chronic disease, and estimated of 300 million people are affected till date. And this is going to increase to 400 million by 2025. In the means, the next 3 years, I would say only 3, because we are almost a end of 2021. So, from 22, if you take till 25, it is only 3 years and in 3 years we are going to have 1 million extra people. 100 sorry, 100 million extra people are going to get contracted with this particular disease.

So, right now we have 300 million by 25, we will have 400 million people affecting or getting affected by this particular disease. As per various studies, if you look at various studies, this population of each and individual country, it ranges from 1 to 18 percent of the population that have this particular condition.

Maybe one person you can see in the country like Bhutan, where it is partly free country they give the laws on the, on pollution are very, very strict and very stringent. So, there the pollution levels are less and it is a carbon free country with a lot of greenery around, probably there is only 1 percent of the population gets affected with this particular asthma.

But whereas, other third world countries, where the developing countries maybe the percentage is much more close to 18 percent of their population is getting affected with this particular condition called asthma. So, you should know how important it is about knowing about this

condition, treating about this condition or you want to treat any other aspects, when the patient is having asthma, or when the patient had an asthmatic attack, and now you are taking and doing some other treatment for this. So, you cannot take this condition very easily. So, you have to be very, very clear. So, what precautions you take when you deal with this sort of patients.

Annually around to 2,50,000 people are dying, because of this condition very, with a so much of advancement of medication, so much of advancement of many other aspects of the equipment or the healthcare system and things like that. But still we are losing 2 and a half lakh people every year is not, it is not something very small. So, the incidence of this particular asthma is increasing.

In even the developed countries, maybe because wherever the pollution levels are increasing their asthma is increasing. So, keeping in mind this, every one of us have to be a little generous towards green revolution, to know about this particular disease in detail, so that when we are treating, when we are doing something like that, so we will be more aware and more clear how to tackle and how to do about, how to tackle this condition and how to do our treatment modalities when there is asthma to this particular patient.

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DEFINITION

Asthma is a heterogeneous, multifactorial disease with variable and mostly reversible respiratory pathway obstruction based on bronchial inflammatory reaction.

Asthma differs from other obstructive lung diseases by being largely reversible either spontaneously or with treatment

NPTEL

Coming to the definition of asthma, asthma as a heterogeneous, when you say heterogeneous, it is a divergent disease and multifactorial, there are multiple factors for this disease and variable it is not it is not constant it is varies and mostly reversing in the sense even without medication, it becomes reversible if the immune system is very good to this particular individual, which is reversible in the respiratory pathway it causes respiratory pathway

obstruction based on the bronchial inflammatory reaction, in the sense there has to be an inflammatory reaction for the asthma to occur.

And this inflammatory reaction has to be at the bronchial level and this inflammatory has to be in the respiratory pathway causes respiratory pathway obstruction and it is irreversible and it is variable factors are there in this and it is divergent disease. So, asthma is heterogeneous, multifactorial disease with variable and mostly reversible respiratory pathway obstruction based on the bronchial inflammatory reaction, very concise definition.

Some of the definitions are given even the symptoms of this particular asthma, but this is the most concise and gives very specific, very clear and good definition which has been accepted internationally. And asthma is again you should differ how differentiated from asthma from the obstructive lung diseases especially COPDs and other things by and large because all the other conditions require there is some amount of medication, some amount of treatment is required.

But the asthma does not require, always medication, sometimes only when this condition is severe probably you need medication, but otherwise is quite reversible and with the treatment or without treatment.

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• EXTRINSIC	• INTRINSIC
- Commonly known as allergic asthma (Dust, food, medicines, pollen, chemicals...etc)	- Infection may be the common cause
- More in children & young adults	- Psychological & Physiological stress plays an important role
- More common & Less severe	- Usually seen in adults
- Bronchospasm occurs within minutes after exposure to allergens	- Attacks are usually severe & long term prognosis is poor
- Usually becomes less frequent in the middle & older age group	- Long term patient may exhibit, cough and sputum between episodes

Coming to the some of the causes and the reasons the individuals who are more prone for this asthma there are which are called as predisposing factors. The individuals who are more prone are the factors which can be from outside, which are called extrinsic factors. Factors within the body, which are called as intrinsic factors. When you say extensive factors, usually you all

everybody, every one of us knows mainly the dust, everybody is allergic to dust, this directly related to the pollution.

Then some people are allergic to some foods, some people are allergic to some medicines, as you all know some people are allergic to penicillin, some people are allergic to Penicillin, some people are allergic to some chemicals like even alcohol, alcohol in the sense spirit. And people, again, all these things are from outside.

Pollen, which is most important thing, especially during winter, how the pollen travels in the air and then the people gets affected and thing like that. And like I said, chemicals for example, paints, some people are allergic to paints and some people are allergic to even to perfumes, the deodorants and things like that, they immediately they cannot take it. So, these are the external factors, which causes this particular condition.

And you see this more commonly in children and young adults, because their immune system and the lung protective mechanism is not very well developed. Over a period of time, once it develops well, yes absolutely there will not be any problem and this is more common in children and this is less severe also. It is not that they will get a severe attack and thing like that, they will have some sort of difficulty in breathing some amount of breezing, cough, cold and things like that.

But slowly it gets which heals on its own or may be little bit of medication is required. Bronchospasm definitely occurs within the exposure of the allergens within few minutes it occurs, but then over a period of time, it gets slowly, slowly it beats off and things like that, there will not be any problem. Usually this particular extrinsic factors causing asthma in the middle age or later, it is little uncommon, because good amount of immunity is developed you are used to that environment, you are used to these particular chemicals, you are used to the dust, you are used to the medication.

So, when you are used to all these things, body already develops a protective mechanism. So, having this in a middle age or later age groups, because of dust or, because of extrinsic factors is less common that is what it indicates.

Coming to the intrinsic factor is mainly because of the infection, which is a common cause, the infection in the lungs or the ones which you know, triggers asthmatic attack. So, this we have to be very careful, your lungs should be clean and healthy, you should not get infected.

The next thing is the psychological and psychological and physiological stress also plays a very important role which is again inside. Psychological in the sense, some people get stressed, they get anger, they start crying and during the process of the heavy breathing and then they are triggering the entire respiratory system, so that the cells or the elements in the cells in the respiratory system gets activated and then there can be an attack which is similar to an asthma.

Physiologically also using, this is all the psychological, physiologically for example, people are going to excessive exercising and to be lifted, they are going to the on the staircase pre assume and things like that. it is physics, but then there is some amount of exertion, because of this exertion, there can be an difficulty in breathing and there can be some amount of panic which is similar to the asthma. And this is usually seen in case of adults and attacks are little longer and severe, which have to be taken into consideration when it is in the adults, these attacks are little longer and severe, because it is not usually, it is not coming from the external, this is from the internal.

So, you have to take more precautions and more careful when there is an attack of asthma in an adults or in the later age. Long term patients in a sense patients who are having long term asthma problem and they exhibit some amount of cough, sputum and in between the episodes of this particular asthma.

So, you have to be clearly identify why they have this problem. Clearly give medication for this particular thing. And then the dosage has to be formulated and regulated according to their episodes of this particular asthma and according to taking the age into consideration, and the weight of the body into consideration, these things have to be given and periodically and at regular follow-up with the pulmonologist has to be there.

And whenever they go for to any doctor to any other purpose, they should give the history that they have asthma and they are under treatment and these are the medication what they are taking and these are the intervals, how they are getting and things like that, they have to reveal everything to doctor. Otherwise, it is going to be little difficult, because the doctor has to know and accordingly his treatment and his treatment plan varies as per the prevailing situation to this particular patient.

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As I said before, the asthma triggers, the trigger and there has to be something has to cause a stimulant, there has to be some amount of triggering point where the bronchioles are triggered and the cells in the bronchioles are triggered. And then there is a chemical reaction happening there. And then the whole process of the series of events happen. And that is how the asthma occurs.

Asthma is usually as you will see this particular slide and there is even asthma can occur, as I said before, because of the exercise, because of the pollen, because of bugs or insects at home, then the chemical fumes, as I said, chemical fumes also can cause cold or continuous subjecting the patient to the cold can lead to some amount of disturbance in the lungs and can be irritate in the lungs and a form of inflammatory reaction can be evoked by that.

And then because of this cold air and humidification, excess humidification and other things, and because of the inflammation that can it can trigger an asthma. And as I said, fungus and spores, and especially if you are seeing the recent episode of this virus and things like that, they also cause some amount of response to the respiratory system.

And this is I am talking about fungus, but virus also can cause disturbance to the respiratory system. And the dust as you all know very well, everybody has the dust allergy and things like that, then they will have the sense that. Then smoking, some people are very allergic even for passive smoking, they will immediately get off and they will have the respiratory system will react immediately.

Then strong odours, it is not just a paint, it is not just perfumes, sometimes what will happen is even our own spirit for example, or any of the hospital when they go for the cleaning, floor cleaning chemicals and all those chemicals also can give a very pungent smell where immediately once the, once you breathe in that particular air, and it goes inside the lungs and the bronchioles will get triggered and then maybe a mild asthma if not a severe asthmatic attack.

And then the pollution as I said, if you are staying somewhere close to any factories and things like that, you should be very, very careful and where there is a lot of pollution in it and then you have to be either you have to wear mask or a protective mechanism or you will have to be very, very very careful staying away such places and things like that.

And anger also can cause because during anger your, if you speak fast and there is a heavy breathing, and then there is a, it triggers the respiratory system and which in turn causes difficulty in breathing and slowly you might even have an asthmatic attack. And then likewise, the same stress if you are taking too much of stress and then when you start breathing heavily, then the hyperventilation, what will happen is, you lose out lot of oxygen and there is a lot of carbon dioxide which is there inside and then patient will have difficulty in breathing.

Then similarly pets, pets also from pets you might get some amount of these things, maybe furs from the pets or their hair or you know their saliva or whatever from them also you are very much prone to get these particular attacks. So, by and large, if you look at all these things, asthma can be triggered, either from inside or outside.

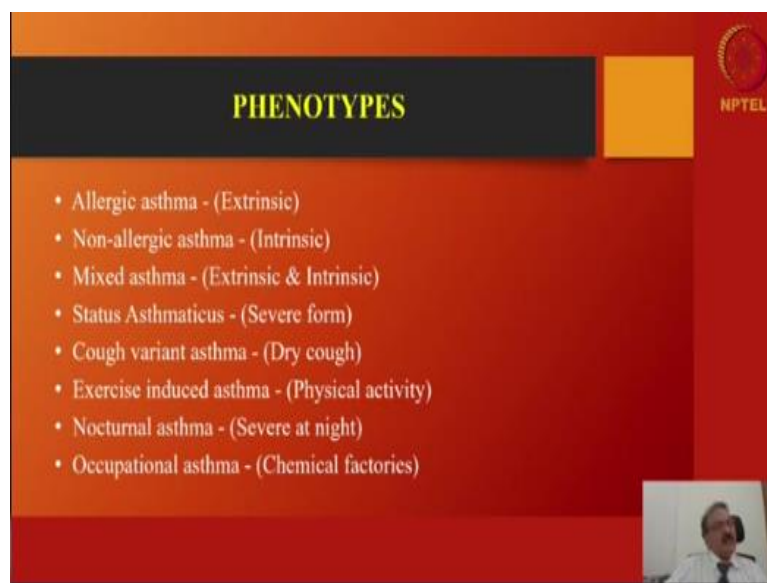
And the outside, most of these things are outside factors what I have mentioned, you have to be extremely carefully without extrinsic factors by taking precautions and likewise, now, everybody is wearing mask, I think probably if unless until there is no pollution and unless until there is no much of this thing, not much of a problem, you should continue wearing mask I feel, because that prevents lot of external factors, especially this fumes, smoke, viruses, bacteria, probably at least to some dust particles and then bugs, pollen everything will be filtered.

So, you will at least get a clean air, which you can breathe properly and things like that, because there is 3 layer, 5 layer filtration and especially the N95 mask phenomenal job probably, with this calling, we will get some studies in later years with mass without mass, what are the incidence of asthma? What is the incidence of COPD? What is the incidence of dust allergies and things like that. Probably over a period of time, in couple of years, we will see a lot of articles coming on it.

So, all these things will be helpful for us. So, we should follow continue at least for some more years and things like that in case if the pollution level comes down very well, fantastic. If the pollution levels even if they are like this, I personally feel should continue wearing masks, because at least your lungs are clear, they can take the clean air inside and the probable chances of asthma is very less and things like that.

So, with this, I said that the triggering factors, external factors are much more than the internal factors. So, you should be more protective from the external factors, a simple wearing masks would be more advantageous.

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Coming to the different types of asthma. As you all know very well, a lot of the phenotypes of asthma, allergic asthma as I said before, everyone, at least 90 percent of the population would have undergone definitely this allergic asthmatic problems or conditions where because of the dust, because of the pollution, because of working in the garden, working in the farms, working with the cattle or working in the houses, anywhere this particular allergic asthma would have been experienced.

This is one non-allergic, this is our intrinsic in the sense of the problems within the lungs or maybe because of the infections in the lungs or because of some other reason within the lungs, there can be an asthma, which has no relation to the external factors, which is called as intrinsic factors, which again is called as non-allergic asthma.

You should differentiate whether it is he is having a intrinsic or extrinsic. Intrinsic is slightly severe, usually seen in the older age, extensive is less severe, younger age group and it is

sometimes it goes off without even medication. Sometimes, most of the time, it goes on without medication. Whereas, intensive, you need to see an pulmonologist, you need to see what is the condition of your lungs, you need to see why it has come because of. What are the intrinsic factors which are triggering asthma and this needs treatment and probably the dosage, the treatment modalities, everything will be explained by the pulmonologist.

Coming to the mixed asthma, that is intrinsic plus extrinsic or intrinsic or extrinsic factors which causes asthma. There can be an intrinsic factor maybe mild inflammation or infection in the lungs, because of smoking, because of weather because of some other.

And then the extrinsic added to that it is a very mild, but that added to some dust, pollution, pollen or whatever other things together they trigger an attack which patient will have an asthmatic attack. So, this is called then both combination which is mixed asthma. Status asthmaticus is a severe form of asthma, which you have to take very seriously and such condition is there, you will have to go for treatment, rest other treatments can be you can put aside especially the dental treatments can be put aside, status asthmaticus should be treated in a serious manner, compared to any of the other asthma.

Cough variant asthma, yes this is a dry cough, usually this particular patient they will have dry cough that is because of the irritation of the bronchioles and irritation of the bronchi and because of this, maybe your exposure to the dust or maybe because of exposure to the pollen or for some reason, there is irritation to this and there is a constant cough, but as such it is no great difficulty in breathing, but the patient will have continuously dry cough (())(24:36) because there is not infected it is irritated.

Coming to exercise induced physical activity. Some people they do excess exercise in the starting itself, initial phases itself they start doing for hours together. No, you should never, you should train your lungs. It is not training only your body, you are training every system of the body and you need to train even lungs for that the capacity to inhale or exhale also should be trained.

So, you have to take it very slowly, you do it on the day 1, you do it only 20 minutes, for 1 week you do only 20 minutes. After 1 week, you do for 30 minutes, after 3 weeks, you do for 40 minutes, after probably after one month you do it for 1 hour. Likewise, you increase gradual capacity of the lung capacity of inhaling and exhaling and things like that, the accommodation, the lungs also will take time to accommodate for this new physical activity.

Likewise, if you gradually increase it is okay, but all of a sudden, if you start doing heavily, then the lungs cannot take and you start panting, and then finally, there will be a triggering of cells in the bronchioles. And then finally, you might go to a little bit of mild asthmatic attack and things like that.

Nocturnal asthma, nocturnal asthma, this is the asthma which occurs usually during sleep, this could be because of too much of parafunctional activity or maybe some parafunctional activity, or very rarely, maybe because of your obstructive sleep Apnea, or maybe the various reasons patient getting disturbed sleep and suddenly get up and then start panicking, and then will have a little bit of difficulty in breathing and things like that. Maybe by bad dream or whatever, all these things.

So, this is called as nocturnal asthma, which again, you should consult a doctor maybe along with pulmonologist, sometimes you may also have to go to a psychiatrist to see why you are waking up at the night time.

And then occupational asthma which is rarely seen, but it can happen in any of these people who are working in chemical factories, especially the paints or other pharmaceutical companies who are giving pharmacy products in formulations and other things if they are mixing and things like that they are making new formulations, because of those fumes and chemicals, which they also might get this particular attacks which mainly because of the occupational hazard, which is called as occupational asthma.

These are the various types, but more commonly it is the allergic asthma, non-allergic asthma, sometimes mixed asthma and very rarely, not rarely, quite rarely you will see status asthmaticus, these are the four major variants which you can see, which may occur either because of the intrinsic or extrinsic factors or combination of both the factors it can come. So, you have to assess why there is an asthma to this particular patient, when you are treating either for a dental problem or you are treating for any other general condition.