PART 1 | IMAGING IN CLINICAL PRACTICE

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A 55 year- old male presented with attacks of right loin pain of few months. The attacks were not associated with neither fever nor burning of micturition. He denies any history of renal stones or haematuria. He has no significant chronic medical illness.
General urine exam was essentially normal. Ultrasound examination of the abdomen and pelvis has shown right sided hydronephrosis with mildly dilated upper right ureter. A native CT scan of the abdomen was done for the patient to exclude urolithiasis figure 1 and 2.

Q1: What are the differential diagnosis of upper ureteric obstruction?

Q2: Based on figure 1, describe the finding shown by the arrow?

Q3: What are the structures referred on by arrows in figure 2?

Q4: What is the radiological diagnosis?

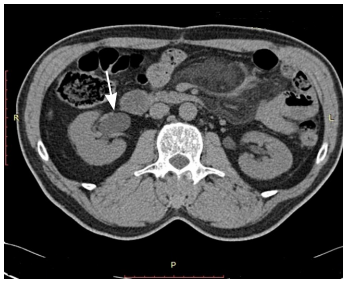

Figure 1: CT Scan of the abdomen transferase section

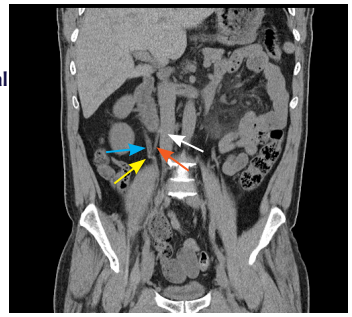

Figure 2: Native CT scan of the abdomen coronal section

ANSWER OF Q1: Hydronephrosis of the right kidney whit arrow.

ANSWER OF Q2:

1. Stones are the most common cause of obstruction that may impact at different level of the ureter. Usually there are 3 sties of impaction of stones; pelvi-uretric junction, at the site of crossing of the iliac vessels, and vesico-ureteric junction).
2. Severe constipation which occurs primarily in children but can happen in adults.
3. Malignant and benign ureteric tumours such as transitional cell carcinoma, squamous cell carcinoma, adenocarcinoma and inverted papilloma.
4. Ureteric kinking by the gonadal veins while crossing the ureter in its middle part to join the inferior vena cava, mainly on the right side.
5. Duplication of the ureters either partial or complete in which it can result in abnormal peristaltic activity in the ureters.
6. Endometriosis in females.
7. Infections such as tuberculosis or schistosomiasis.
8. Trauma.
9. Retro-peritoneal fibrosis occurs when fibrous tissue grow in the retro-peritoneal space due to malignant or medications which result in fibrous tissues encircling the ureter and causes obstruction.

ANSWER OF Q3:

Blue arrow: the right ureter.
Red arrow: Right gonadal veins entering the inferior vena cava.
Yellow arrow: Ureteric kinking around the right gonadal vein.
White arrow: Inferior vena cava.

ANSWER OF Q4:

A Ureteral kinking. Although kinking of the ureter is not that severe, sometimes it presents as hydronephrotic changes and ureteric pain mainly on right side because the gonadal veins drain to the inferior vena cava unlike the left gonadal veins that drain to the left renal veins.

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PART 2 | WHAT DO YOU KNOW ABOUT?

Chronic obstructive airway disease (COPD)

Recommendations of GOLD Guidelines 2017

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Chronic obstructive pulmonary disease (COPD) is a very common disease involving the respiratory system. The international estimation suggests that the prevalence and incidence of the disease are expected to rise in all the countries. The major risk factor for COPD is smoking; the bad habit that is also widely distributed among all communities all over the world. Iraq is not an exception, the growing numbers of young people, of both sexes, who are starting smoking habit now is going to be reflected as an increasing incidence of COPD in the future with all social, economical and health burden and consequences. Now we are reviewing with you in this part the knowledge important for the diagnosis and treatment of COPD as determined by the GOLD guidelines 2017.

Answer the following questions by putting the word true or false before each statement:

1. COPD :

(a) It is a genetically determined disease.

(b) It is a preventable disease.

(c) It occurs only in people who smoke.

(d) Once it is diagnosed, COPD cannot be treated.

(e) Nowadays, It is the 4th common cause of death worldwide.

2. The following are recognized risk factors for COPD:

(a) Age

(b) Gender

(c) Smoking

(d) Severe childhood infections

(e) High socioeconomic status.

3. Smoking and COPD:

(a) The impact of smoking of tobacco on the development of COPD is decreasing nowadays.

(b) The risk of development of COPD is dependent not on smoking of tobacco itself but on the way one may smoke.

(c) Passive smoker may develop chronic respiratory symptoms but never COPD.

(d) Water pipe is the least dangerous way of smoking tobacco in development of COPD.

(e) Smoking during pregnancy may affect growth and development of the lungs of the fetus.

4. The pathology of COPD:

(a) COPD is a disease of airways only.

(b) In most of the cases, emphysema is the only pathological diagnosis.

(c) It is a local disease and presence of systematic manifestations should lead to search for another diagnosis.

(d) Involvement of pleura is usually seen.

(e) Pulmonary hypertension is an early pathological changes seen in COPD.

5. The following may raise the suspicion of COPD:

(a) Fever.

(b) Chronic cough.

(c) Attacks of shortness of breath.

(d) Chronic sputum production.

(e) History of exposure to tobacco smoking.

6. In the diagnosis of COPD:

(a) *Absence of symptoms will exclude the diagnosis of COPD.*

(b) *Large volume sputum can exclude the diagnosis of COPD.*

(c) *Chronic cough and sputum production is seen in only 30 % of patients with COPD.*

(d) *Wheeze is not a sign of COPD*

(e) *Purulent sputum has a weak association with development of exacerbation*

7. Spirometry in the diagnosis of COPD:

(a) Peak expiratory flow can surrogate spirometry in the diagnosis of COPD.

(b) It is recommended for screening people of COPD.

(c) The presence of a post-bronchodilator FEV1/FVC < 0.70 confirms the diagnosis of COPD.

(d) Using fixed ratio of FEV1/FVC can overestimate the diagnosis in elderly.

(e) Spirometry is not needed in most of the cases in the diagnosis of COPD.

8. The following are complications of COPD:

(a) Cor pulmonale.

(b) Pure hypoxaemic respiratory failure

(c) Osteoporosis

(d) Glumereolonephritis

(e) Syncope.

9. The following are required in the assessment of patient with COPD before starting treatment:

(a) Level of airflow limitations.

(b) Impact of symptoms on patient's health status.

(c) Risk of development of exacerbation.

(d) Risk of future hospital admissions.

(e) Presence of concomitant cardiovascular diseases.

10. Exacerbations in COPD:

(a) Exacerbation is defined as an acute worsening of respiratory symptoms that needs hospital admission.

(b) Frequent exacerbator is defined as three or more exacerbations per year

(c) Severe CODP exacerbation that needs hospitalization is associated with poor prognosis and increased risk of death.

(d) The best predictor for having frequent exacerbations is a history of severe breathlessness.

(e) Blood Eosinophil counts may predict exacerbation.

11. The following investigations are required routinely in the diagnosis of COPD:

(a) CT scan of the chest.

(b) Lung volumes.

(c) Diffusing capacity.

(d) Measurement of alpha- 1 antitrypsin level.

(e) Chest X ray.

12. Cessation of smoking in COPD:

(a) The success of achieving smoking cessation is 50 %.

(b) E- cigarette is a widely accepted method to help quitting of tobacco smoking.

(c) Nicotine replacement therapy is contraindicated in patient with stable ischemic heart disease.

(d) Addition of drugs like bupropion have not been shown to increase long term quit rates.

(e) Behavioural therapy and counselling is essential in any attempt to quit smoking.

13. Treatment of stable COPD :

(a) The goal is to reduce symptoms only.

(b) Smoking cessation should be advice in all patients.

(c) Pneumococcal vaccination should be use in all patients with COPD.

(d) Physical activity should be encouraged in all patients.

(e) Rehabilitation is indicated in mild COPD.

14. Use of bronchodilators in the treatment of stable COPD :

(a) Use of LABAs improve the survival in COPD patients.

(b) According to systematic reviews, LAMAs are mildly better than LABAs in controlling symptoms.

(c) Use of LAMA or LABA can decrease the number of exacerbations.

(d) Tiotropium has many anticholinergic adverse effects.

(e) Methylxanthines have a prominent bronchodilator effect.

15. Use of anti-inflammatory drugs in COPD :

(a) ICS alone is not recommended in the management of COPD.

(b) Addition of LAMA to LABA is preferable than adding ICS to LABA in patient who do not respond to LABA alone.

(c) The major adverse event of using ICS in severe and very severe COPD is pneumonia

(d) Cardiac adverse events limit the wide use of Roflumilast.

(e) Long term azithromycin therapy is recommending in reducing exacerbations in mild to moderate COPD.

16. Other options of treating COPD:

(a) Leukotriene modifiers can be used in selected patients.

(b) Regular use of NAC may reduce exacerbation rate in selected patients

(c) O2 therapy has no effect on mortality in patient with COPD and chronic respiratory failure

(d) CPAP is a good option in treatment of stable COPD.

(e) Lung volume reduction surgery may improve survival.

17. Treatment of Exacerbations of COPD:

(a) LABA is the first choice in treatment of exacerbation.

(b) Systemic corticosteroid can improve FEV1 and shorten recovery time and duration of hospitalization.

(c) Aminophylline infusion is usually recommended.

(d) NIV is the treatment of choice in respiratory failure.

(e) Antibiotics should be given to all patients as early as possible.

Chronic obstructive airway disease (COPD)

Recommendations of GOLD Guidelines 2017

Answers of Questions on page

1. ***Answers (F, T, F, F, T)*** : Although genetics may play a role in modifying the risk of COPD in smokers, there may also be other risk factors involved. COPD is a common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities, usually caused by significant exposure to noxious particles or gases. Although smoking is the major risk factor for COPD, other occupational and indoor and outdoor exposure may cause it. COPD is currently the 4th leading cause of death in the world but is projected to be the 3rd leading cause of death by 2020. It has a major impact on persons involved and the community in general and this impact is expected to be increased with time.

Message: (**COPD is preventable, treatable, and its prevalence expected to be increased in the communities**)

2. ***Answers (T, T, T, T, F)***: Age is a risk factor for COPD. However, it is unclear if healthy aging as such leads to COPD or age reflects the sum of cumulative exposures throughout life. Old studies have suggested that COPD and its mortality is greater in men than women. But recently in developed countries, the prevalence of COPD is now almost equal in men and women due to changing pattern of tobacco smoking. Some study although controversial suggest that women are more susceptible to the effects of tobacco smoke than men. Smoking is the most common risk factor encountered in COPD. A history of severe childhood respiratory infection has been associated with reduced lung function and increased respiratory symptoms in adulthood. Low socioeconomic status, not the high, is associated with an increased risk for development of COPD. It is unclear whether this is a real effect or reflects more liability to indoor and outdoor exposure, crowding, poor nutrition, and infections which can cause COPD. Table 1 shows the risk factors of COPD.

Table 1: Risk Factors of COPD

	Risk Factors
1.	Genetic factors: AATD, Significant familial risk of airflow limitation
2.	Age and gender
3.	Lung growth and development
4.	Exposure to particles • Tobacco smoke • Occupational exposures • Indoor biomass cooking in poorly ventilating dwellings
5.	Socioeconomic status
6.	Asthma and airway hypersensitivity
7.	Chronic bronchitis
8.	Infections

AATD: Alpha-1 Anti Trypsin Deficiency

Message: (**smoking is the most common risk factor for COPD, but there are many others**)

3. ***Answers (F, F, F, F, T)***: Smoking is the most commonly encountered risk factors for COPD. In spite of the presence of other risk factors for development of COPD, smoking of tobacco has still the major impact on the prevalence of COPD and its financial and social burden. The risk of having COPD is related to smoking of tobacco itself not to its way so smoking cigar, pipe, and water pipe are at least carry the same risk for COPD. And none of them can be considered to have a least effect. Passive smoker which defined as those who expose to tobacco smoking indirectly by living in contact with those who smoke (environmental tobacco smoke) has gained a growing attention. Studies have shown that they may also experience not only development of chronic respiratory symptoms but also frank COPD. It is imperative to encourage any women to quit smoking especially those willing to become pregnant as smoking during pregnancy may pose a risk for the fetus by affecting lung growth and development in utero.

Message: (**All the ways of smoking carry the same risk for COPD, COPD can occur in passive smoker, smoking affect fetuses of pregnant women**)

Table 2: Other causes of chronic cough

Intra-thoracic
Asthma
Lung Cancer
Tuberculosis
Bronchiectasis
Left Heart Failure
Interstitial lung disease
Cystic fibrosis
Idiopathic cough
Extra-thoracic
Chronic allergic rhinitis
Post nasal Drip Syndrome (PNDS)
Upper Airway Cough Syndrome (UAACS)
Gastro-oesophageal reflux
Medication (e.g. ACE inhibitors)

4. ***Answers (F, F, F, F, F)***: Pathological changes characteristic of COPD are found in the airways, lung parenchyma, and vasculature, but pleura do not usually involve. These changes are chronic inflammation, and structural changes resulting from repeated injury and repair. Emphysema alone is very rare in COPD; it is usually presented as combination of chronic bronchitis with variable degrees of emphysematous changes. Patient with COPD may be presented with systemic manifestations like weight loss, and muscles weakness. These manifestations may occur secondary to inflammatory mediators of the disease, effect of inactivity and tissue hypoxia, and adverse effect of its treatment. Pulmonary hypertension is a recognized feature of COPD, but it may develop late in the course of COPD and is due mainly to hypoxic vasoconstriction of the small pulmonary arteries which is eventually resulting in structural changes.

Message: (**COPD involves not only the airways, but also the lung parenchyma, and pulmonary vasculature. It has many systemic manifestation, in addition to its local effect on the lungs.**)

5. ***Answers (F, T, F, T, T)***: Clinically, COPD should be suspected in any patient who has classical symptoms with a history of exposure to risk factors known to be associated with development of COPD like tobacco smoking, occupational fume and chemicals, and indoor biomass fuels. Classical symptoms include chronic productive cough (**table 2** shows other causes of chronic cough) which is the earlier symptom to be encountered. Intermittent or nonproductive cough may also reported by some patients with COPD. The second symptom is chronic sputum production which may take any pattern; however, small quantities of tenacious sputum is the usual pattern. Traditionally, sputum production for 3 months for two consecutive years is the clinical definition of chronic bronchitis. The third important symptoms is shortness of breath which is characterized as being progressive overtime and usually on exertion. Fever per se is not a feature of uncomplicated COPD.

Message: (**Suspect COPD in a patient with chronic cough, progressive breathlessness, and chronic sputum production who has been exposed to a risk factor mainly smoking**)

6. ***Answers (F, F, T, F, T)***: Spirometry is required for confirming the diagnosis of COPD in those who has clinical suspicion of the disease. Significant airflow limitation may be present without chronic dyspnea, cough, and/ or sputum production and the vice versa. Studies have reported that chronic cough with sputum production is found in only 30 % of patients with COPD. Large volume sputum cannot be used to exclude COPD; however, we should exclude first the presence of associated bronchiectasis. Although purulent sputum may reflect inflammation mediator and may identify the onset of a bacterial exacerbation; however, this association is rather weak. Wheeze is a recognized sign of asthma, nevertheless its presence cannot exclude the diagnosis of COPD.

Message: (**Confirmation of the diagnosis of COPD is by spirometry. Absence of symptoms or normal spirometry does not exclude the presence or airflow limitation**)

7. ***Answers (F, F, T, T, F)***: The diagnosis of COPD should always be confirmed by spirometry. The presence of a post-bronchodilator FEV1/ FVC < 0.70 confirms the presence of persistent airflow limitation and thus of COPD in appropriate situation. Peak expiratory flow is

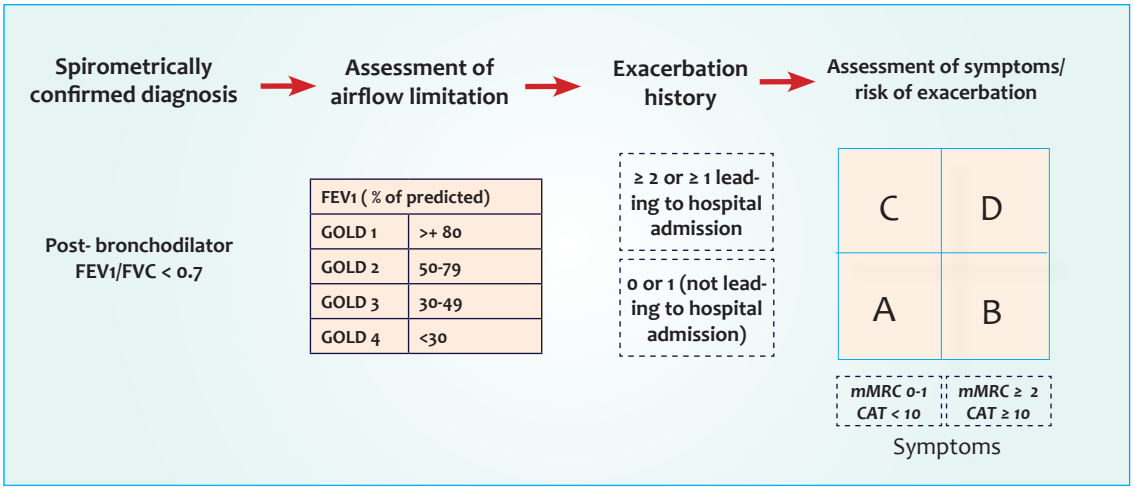

Figure 1: The refined ABCD assessment tool

a sensitive tool to detect airflow limitation, however, it has a weak specificity as it cannot differentiate between asthma and COPD. Based on this fact peak expiratory flow cannot surrogate spirometry for the diagnosis of COPD. GOLD recommends spirometry for case finding of COPD i.e. in patients with symptoms and/or risk factors. It is not recommended for screening purpose of the people in general. Using fixed FEV1/FVC ratio for the diagnosis of COPD may overestimate the diagnosis in the elderly and underestimate it in adult < 45 years; however, the risk of misdiagnosis or over-diagnosis based on fixed ratio is limited if we considered other clinical symptoms.

Message: (**Post-bronchodilator FEV1/FVC < 0.70 confirms the diagnosis of COPD. It should not be used for screening**)

8. Answers (T, F, T, F, T): COPD can cause persistent hypoxaemia leading to pulmonary vascular changes that may eventually lead to pulmonary hypertension and cor pulmonale. Cor pulmonale presents with bilateral ankle oedema associated with auscultatory findings of pulmonary hypertension on precordial examination. Usually the patient with severe COPD end up with hypercapnic respiratory failure with variable degrees of hypoxaemia. Presence of pure hypoxaemic respiratory failure is not a feature of COPD. Osteoporosis and muscle weakness are complications which might be seen in patients with COPD, while glumereonephritis is not a direct complication of it. Attacks of cough may be severe enough to cause rib fracture and syncopal attacks in some patients.

Message: (**Core pulmonale and hypercapnic respiratory failure with variable hypoxaemia. Rib fractures and syncope can occur**)

9. Answers (T, T, T, T, T): Before stating treatment, patient diagnosed with COPD should be assessed carefully to determine the level of airflow limitation, its impact on his health status, and the risk of future events like exacerbations, hospital admissions or death. In addition, searching about the presence of co-existed cardiovascular and other respiratory diseases is very helpful to provide a proper therapy. Degree of airflow limitations can be assessed by measuring FEV1 with spirometry, but it should be mentioned that there is a weak correlation between FEV1, symptoms and impairment of a patient's health status. Assessment of symptoms is made with many tools; the most important are The Modified British Medical Research Council (mMRC) Questionnaire and COPD Assessment Test (CAT™). Assessment of number of exacerbation and hospital admission are very important to help choosing the treatment of any patient with COPD, the same is also applicable for detection of the presence of concomitant cardiorespiratory diseases. See **figure 1**

Message: (**Assessment for treatment should be based on severity of airflow limitations,**

Table 3: Key points for the use of bronchodilators in COPD

• Inhaled bronchodilators are central to symptom management and commonly given on a regular basis to prevent or seduce symptoms **(Evidence A)**.
• Regular and as needed use of SABA or SAMA improves FEV1 and symptoms and indicated only when there is occasional dyspnoea **(Evidence A)**.
• LABAs or LAMAs are preferred over short acting agents **(Evidence A).**
• LABAs or LAMAs significantly improve lung function, dyspnea, health status, and reduce exacerbation rates **(Evidence A).**
• Patient may be started on single or dual long-acting bronchodilator, in those with persistent dyspnea on single long acting agent should be escalated to two **(Evidence A).**
• Combinations of SABA and SAMA are superior compared to either medication alone in improving FEV1 and symptoms **(Evidence A).**
• **Combination treatment with a LABA and LAMA reduces exacerbation compared to monotherapy (Evidence B) or ICS/LABA (Evidence B)**
• LAMAs have a greater effect on exacerbation reduction compared with LABAs **(Evidence A)** and decrease hospitalization **(Evidence B).**
• Inhaled bronchodilators are recommended over oral bronchodilators **(Evidence A).**
• Theophylline exerts a small bronchodilator effect in stable COPD **(Evidence A)** and that s associated with modest symptomatic benefits **(Evidence B).**
• Theophylline is not recommended unless long term treatment bronchodilators are unavailable or unaffordable **(Evidence B).**
SABA: short acting beta agonist, SAMA: short acting muscarinic antagonist, LABA: long-acting beta agonist, LAMA: long-acting muscarinic antagonist

Table 4: Key points for the use of anti-inflammatory agent in COPD

• Long term monotherapy with ICS is not recommended **(Evidence A)**
• In patient using long acting bronchodilators who has a history of exacerbation, addition of ICS may be considered. **(Evidence A)**
• Long term therapy with oral ICS is not recommended **(Evidence A)**
• In patients with exacerbations despite LABA/ ICS or LABA/ LAMA/ ICS, chronic bronchitis and severe to very severe airflow obstruction, the addition of PDE4 inhibitor can be considered **(Evidence B)**
• In former smokers with exacerbations despite appropriate therapy, macrolides can be considered **(Evidence B)**
• Statin is not recommended for prevention of exacerbations **(Evidence A)**
• Antioxident mucolytic are recommended only in selected patients **(Evidence A)**
COPD: Chronic obatructive airway disease, ICS: inhalor corticosteroid, LABA: long-acting beta agonist, LAMA: long-acting muscarinic antagonist, PDE4: phosphodiesterase 4

clinical presentation and number of exacerbations)

10. Answers (F, F, T, F, T): Exacerbation defined as an acute worsening of respiratory symptoms that result in additional therapy. It is mild when it is treated by short acting bronchodilators only, moderate when SABA plus antibiotics and/or oral corticosteroid are need for its treatment, and severe when hospitalization or emergency visits are required. Hospitalization for CODP exacerbation is associated with poor prognosis and increased risk of death. Frequent exacerbator defined as two or more exacerbations per year and the best predictor for having frequent exacerbations is a history of earlier treated events. Blood Eosinophil counts is a biomarker of risk of exacerbation and predictor of the effectiveness of ICS on future development of exacerbation.

Message: (**Exacerbation is acute worsening of respiratory symptoms that needs additional therapy. Those with a history of exacerbations are more prone to have then in the future.**)

11. Answers (F, F, F, F, F): Chest X ray is not essential in the diagnosis of COPD, and in most times it is normal. However, it is needed to exclude other differential diagnosis in patient with chronic cough. The same is true for CT scan of the chest which is recommended for the diagnosis of concomitant respiratory diseases such as bronchiectasis and lung cancer, and it is also recommended in the assessment of a patient with COPD for undergoing surgical and non-surgical lung volume reduction intervention. Although Lung volumes and diffusing capacity are needed to determine the severity of COPD, they are not essential for the diagnosis of COPD or guiding its man-

agement. Alpha- 1 antitrypsin deficiency is a recognized cause of COPD and emphysema, but it is not essential to measure alpha 1 antitrypsin level in any patient suspected to have COPD. Measurement of alpha- 1 antitrypsin level is recommending in patient with COPD who is younger than 45 years, has a family history of AATD and has a panlobular basal emphysema.

Message: (**CXR, CT scan chest, lung volumes and diffusing capacity are not routinely measure for the diagnosis of COPD**)

12. Answers (F, F, F, T, T): Cessation of smoking should always be advised in any patients with COPD. Despite the provision of resources and the time allocated the success rate of quitting is not more than 25 %. E-cigarettes are increasingly used, but their overall safety profile has not been well defined. So pending for further studies, e-cigarette is not an option for smoking cessation. Nicotine replacement therapy (NRT) reliably increases the long term smoking abstinence rates and can be used to help people willing to quit. NRT can be used in patient with stable ischemic heart disease, but it is contraindicated to be used in patient with recent myocardial infarction, and stroke. Varenicline, bupropion, nortriptyline have been shown to increase long term quit rates but should always be used as a component of a supportive intervention programme rather than a sole intervention for smoking cessation. Whatever the method used to help quitting, the success rate depends on the provision of consistent advice, support and counselling as part of a strategic plan.

Message: (**Smoking cessation is essential for treatment and prevention of COPD. NRT and some drugs may help in conjunction with advice and counselling**)

13. Answers (F, T, F, T, F): The goal of treatment of stable COPD is to relief symptoms, improve exercise tolerance, and improve health status. In addition to reduce the risk by prevention of disease progression, prevention and treatment of exacerbations, and reducing mortality. Smoking cessation, physical activity and flu vaccine should be encouraged in all COPD patients regardless of the severity. Pneumococcal vaccination should be offered in all those who are over 65 years, PPSV 23 vaccine can be used in younger COPD patients with significant co-morbid conditions. Pulmonary rehabilitation programmes are needed in all severities of COPD apart from the mild form (Group A in figure 1).

Message: (**smoking cessation, physical activity, and flu vaccine should be provided for all patients with COPD**)

14. Answers (F, T, T, F, F): Use of LABAs or LAMAs improve FEV1, lung volumes, symptoms, health status, exacerbations rate and number of hospitalization. Studies have failed to show a significant effect for both of them on mortality and rate of decline in lung functions. Systematic review of RCTs have showed a marginal superiority for LAMAs in comparison with LABAs in terms of improving symptoms and reducing exacerbations. Tiotropium which is one of LAMAs is poorly absorbed from the bowel so it has very limited systemic adverse effects in comparison of anti-cholinergics administered by other routes. However, the use of SAMAs or LAMAs by nebulizers can exacerbate acute glaucoma due to direct abortion of the drugs via conjunctivae. Methylxanthines are non-selective phosphodiestrase inhibitors that exert its effect through being a bronchodilator and has a potential capacity to enhance the functions of inspiratory muscles. This bronchodilator is modest and studies have shown that the improvement of FEV1 and symptoms is great on adding it to salmeterol. Methylxanthines has a narrow therapeutic window, its use is preserved to failure or inability to afford other bronchodilator inhalers. Table 3 shows the recommendations of using bronchodilator.

Message: (**LABAs and LAMAs improve symptoms, FEV1, and reducing exacerbations but not affect mortality and rate of decline of pulmonary functions.**)

15. Answers (T, T, T, F, F): Long term use of ICS or oral steroid are not recommended in the management of stable COPD. However, ICS combined with a LABA is more effective than the individual components in im-

proving lung function and health status and reducing exacerbations in patient with exacerbations and moderate to severe COPD. It is recommended by GOLD guidelines to add another long acting bronchodilator once a single one fail to show the required effect than adding ICS. The recommendation has been based on the fact that ICS increases the incidence of pneumonia especially in severe and very severe COPD (Group D). Roflumilast is a Phosphodiesterase-4 (PDE4) inhibitor used to decrease exacerbation on failure of other appropriate treatment. The major side effects reported by using roflumilast is troublesome gastrointestinal symptoms like diarrhea, nausea and decrease appetite. These symptoms were severe enough to enforce stopping it in one third of the patient. Long term use of azithromycin or erythromycin have shown to reduce exacerbations in COPD and they are recommended in group D on failure of others. Such therapy is associated with an increased incidence of bacterial resistance and hearing test impairment. For the evidence of using anti-inflammatory drugs see table 4.

Message: (**ICS should not be used alone. It decreases exacerbation rate on adding to LABA or LAMA. It may increase pneumonia**)

16. Answers (F, T, F, F, T): Leukotriene modifiers, and nedocromil have not been tested adequately in COPD patients to be recommended in its treatment. Regular use of NAC and carbocysteine may reduce exacerbation rate in selected patients. They cannot be recommended on a wide range due to the heterogeneity of the population studied. Long term administration of oxygen (> 15 hours per day) to patients with chronic respiratory failure has been shown to increase survival in patients with severe resting hypoxemia. Oxygen does not affect survival or hospitalization for stable COPD and resting or exercise induced moderate arterial oxygen desaturation. Without the presence of concomitant OSA, CPAP is not recommended in treatment of stable COPD. During exacerbation of COPD, noninvasive ventilation (NIV) in form of (NPPV) is the standard of care to decrease morbidity and mortality in exacerbation with acute respiratory failure. However, in stable patient the effect of using home NPPV on survival and re-hospitalization in chronic hypercapnic COPD is conflicting. Lung volume reduction surgery LVRD improves survival in patients with severe emphysema, upper lobe emphysema and low post-rehabilitation exercise capacity.

Message: (**Leukotriene modifiers like montelucast is not recommended in COPD. Long term O2 therapy improve survival in severe resting hypoxaemia**)

17. Answers (F, T, F, T, F): Management of acute exacerbations of COPD should be started by rapid assessment of the patient to determine the presence of life threatening and non-life threatening respiratory failure by clinical examination and blood gas analysis. Oxygen therapy should be initiated once it is indicated. Short acting bronchodilators, single or dual, by spacer or nebulizer should be used as soon as possible. Addition of long acting bronchodilator should be started once the patient becomes stable. Oral corticosteroid for a week is shown to improve FEV1, shorten recovery time and duration of hospitalization. Aminophylline infusion is no longer recommended due to its potential side effect profile. Oral antibiotics are indicated when signs of bacterial infections are present ie increasing sputum purulence. NIV should be the first mode of ventilation used in COPD patient with acute respiratory failure if there are no absolute contraindication. It improves gas exchange, reduce work of breathing, and the need for intubation, decreases duration of hospitalization and improves survival.

Message: (**In exacerbation we use short acting agent through nebulizer, oral steroid may be indicated, aminophylline has no role**)

Answers are based on the Global initiative for chronic Obstructive Lung Disease 2017

1. Global Strategy for Diagnosis, Management, and Prevention of COPD – 2017. GOLD report 2017. [Internet] available at: http://goldcopd.org/gold-reports-2017/ [accessed 20 December 2017.

PART 3 | Medical Ethics in Clinical Practice

Psychiatry and Decision-Making Capacity

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Psychiatry is a critical, yet often neglected, area of medicine. Although mental health and substance use disorders are the leading cause of disability worldwide, World Health Organization (WHO) statistics from 2014 showed that the median number of practicing psychiatrists worldwide is 0.1 per 10,000 people.[1,2]

Mental disorders include common conditions such as depression and anxiety, abuse of alcohol and other substances, and severe and disabling disorders such as schizophrenia and bipolar disorder.[2]

The mismatch between the global burden of mental disorders and availability of mental health resources is alarming. The ethical implications of inequalities in mental health for people and nations are profound and must be addressed in efforts to fulfil key principles of bioethics of medicine and public health: respect for individual's autonomy, justice, beneficence, and non-malfeasance.[1]

Psychiatry has always been an area of medicine with unique ethical challenges. Indeed, the very nature of psychiatric illnesses can raise challenging questions about patient autonomy AND choice of psychiatric treatments.[1,3]

The conflict between autonomy and beneficence/non-maleficence often leads to distress among health care professionals, as well as patients and their families, and frequently manifests in psychiatric consultations for evaluation of the patient's capacity to make medical decisions or to refuse recommended treatment including the informed consent.[3,4]

Capacity as a term means the person's mental ability to make informed decisions about their own health.[5] the patient's capacity to make medical decisions, capable patients, includes the right to accept or reject any medical care recommended. This means that psychiatrists must appropriately assess issues of autonomy and capacity, taking into consideration any external constraints or psychopathology that may impact these issues.[3]

Informed Consent is the process of describing the different treatment options to the patient and then asking for their permission to move forward with their chosen plan. For an informed consent to be valid, the patients must be given all of the relevant information on the treatment plan before making their decision. This includes potential benefits, likely prognosis, potential negative outcomes, cost, alternative treatments available and the option to receive no treatment. Physicians not only have to make sure they tell their patients all this information but also that their patients understand it.[4,5]

So In assessing the capacity to provide informed consent, remember that it comprises 3 critical elements: providing information (ie, full disclosure), decisional capacity, and voluntarism capacity (ie, ability to make a decision, free from coercion.[4]

Many patients have uncertain capacity to make decisions about their care. Determining whether a patient possesses a decision-making capacity may challenge physicians.[6]

Researches outlined 4 standards for the assessment of decisional capacity:

- Ability to communicate a choice.
- Ability to understand information necessary for the specific decision at hand.
- Ability to appreciate the implications and significance of the provided information or the choice being made.
- Ability to reason by weighing and comparing options as well as consequences of the potential decision.[4, 5]

Advance directives (Living wills) are written, legal instructions regarding patient preferences for medical care if the patient are unable to make decisions for himself. Advance directives guide choices for doctors and caregivers if patient is terminally ill, seriously injured, in a coma, in the late stages of dementia or near the end of life.[7]

Psychiatric advance directives (PADs) are written documents or oral statements that allow adults with decision-making capacity to declare their treatment preferences and/or to designate proxy decision makers to act on their behalf should they be deemed incapable in the future of making informed choices on their own.[8]

CASE SCENARIOS

Case number 1:

Mona is a 73-year-old lady with diabetes, hypertension, and end-stage renal disease. She is receiving haemodialysis and has had above-the-knee right lower extremity amputation. She is brought to the hospital after a fall. This is the third similar presentation to the hospital during the past 2 months.

The evaluation reveals malnutrition, dehydration, and early-stage bedsores. A treating physician and physiotherapist have recommend a skilled nursing facility as the most appropriate placement for her. However, the patient fervently refuses this option, and psychiatry is called in to evaluate her capacity to make decisions.

Mona is found to be alert and fully engaged and goal-oriented thought process. She explains that she has been independent her entire life and that she values her independence very much. She states that she "would rather die than live anywhere else rather than [her] own home." She understands that she is in poor health but is willing to engage additional services at home to address any health concerns. If that isn't enough, she "would rather go home and suffer the consequences than be placed in a nursing home."

Q: from ethical point of view, the psychiatrist should act as the following:

a) Respect patient autonomy.
b) Try to convince her family to get her agreement to the skilled nursing facility.
c) Consult another Psychiatry for second opinion.
d) Decide that she is incapable for decision making regarding her managements.

Case number 2:

An elderly woman told her daughters that if she ever ended up with dementia she wouldn't want to live like that. Years later she developed senile dementia and her daughters had her move into a nursing home. Although she did not recognize family or friends, she enjoyed the

company of others at the nursing home. When she stopped eating, her daughters were asked whether she should receive a feeding tube.

Q: In this case the best act is the following:

a) The daughters may approve the insertion of a feeding tube in condition that future triggers could lead to its removal or nonuse.

b) The daughters should consider their mother's previously stated wishes as an advance directive and must not place a feeding tube.

c) The daughters cannot decide for their mother because of lack of an advance directive.

d) Before placing a feeding tube, the daughters should obtain a court order.

Case number 3:

A 64-year-old woman with Multiple Sclerosis is hospitalized. The team feels she may need to be placed on a feeding tube soon to assure adequate nourishment. They ask the patient about this in the morning and she agrees. However, in the evening (before the tube has been placed), the patient becomes disoriented and seems confused about her decision to have the feeding tube placed. She tells the team she doesn't want it in. They revisit the question in the morning, when the patient is again lucid. Unable to recall her state of mind from the previous evening, the patient again agrees to the procedure.

Q: Is this patient competent to decide?

a) This patient is competent to decide because her underlying disease is NOT impairing her decision making capacity.

b) This patient is competent to decide during her lucid periods.

c) The patient's decision making capacity is questionable, and getting a surrogate decision maker involved can help determine what her real wishes are.

d) In this situation where the patient is changing her decision, the doctor should decide whether or not to place a feeding tube.

ANSWERS OF CASE SCENARIOS

Answer of case 1 is a:

Ethical formulation

This case demonstrates a common conflict between a patient's autonomy and the physician's duty and drive to provide beneficence. Physicians often feel overprotective of patients when confronted with what they feel are unsafe decisions. They begin to question the patient's decisional capacity. Paternalism exists when a physician believes that he knows better than the patient what is in the patient's best interests and places the patient's medical good above all else. However, it is the physician's responsibility to respect the patient's values and to understand the impact of medical and psychosocial interventions, keeping in mind the patient's particular cultural/attitudinal context. It is important to continue to closely work with the patient to find the best solution, even if the work is distressing, because the physician feels that

the patient is making the wrong decision. In this case the psychiatrist finds that although the health care providers believe that her decision is poor and places her at high risk for recurrent complications and readmissions, this lady has the capacity to make decisions regarding her discharge. The team is advised to work closely with the patient to maximize her supports at home.[4]

Answer of the case 2 is a:

Ethical formulation

The daughters should consider her previously stated wishes as well as her current best interests. The daughters don't know how to proceed because they did not have the advance care planning conversation that clarified what their mother meant when she said that she wouldn't want to live with dementia. Was it the cognitive problems, the problems with self-care, living in an institution, or the sense that living with dementia would not bring any joy? Without knowing this, the daughters are unprepared to step into her mother's shoes.

Without really knowing their mother's wishes, the decision about a feeding tube is difficult. The daughters may choose to approve the insertion of a feeding tube with the proviso that future triggers could lead to its removal or nonuse. For example, if her current quality of life deteriorates to the point where she is no longer experiencing joy, or if she physically tries to remove the tube and keeping the tube in means restraining her, it may be appropriate to remove the feeding tube at that time.[9]

Answer of the case 3 is c :

Ethical formulation

This patient's underlying disease is impairing her decision making capacity. If her wishes are consistent during her lucid periods, this choice may be considered her real preference and followed accordingly. However, as her decision making capacity is questionable, getting a surrogate decision maker involved can help determine what her real wishes are.[10, 11]

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