

## **DRUG DEPENDENCE** **(Drug abuse), (Addiction)**

### **Introduction:**

- The non-medical use of drugs is a worldwide problem that has reached almost epidemic proportions. (***Commonly seen in students & driver who want to stay awake for long time***)
- A drug is any substance that, when taken into the living organism, may modify one or more of its actions.
- However, the non-medical use of certain groups of drugs, particularly those to which dependence will develop, is the major cause of concern.
- The health of the drug user will be adversely affected and his behavior may become antisocial and bring him into conflict with the law.

### **Definition:**

**Drug dependence is** best defined as a physical and psychic state resulting from the repeated (chronic) interaction between a living organism and a drug, characterized by:

- 1- Irresistible desire to take the drug.
- 2-Tolerance: ↑ the dose to get the same effect.

e.g. morphine → therapeutic dose =10mg → recurrent use for long time → tolerance & addiction → =100mg.

- 3- Physical and physiological dependence. Can't perform his daily activity without taken the drug.
- 4-Withdrawal symptoms:

This is a serious characteristic illness occurring on withdrawal of the drug for ***more than 12-24 hrs from the last dose***, may lead to death.

Normally stress (like exercise, pain) → lead to release endorphin → feelings of exhilaration.

if he use drugs , it'll inhibit the release endorphin → withdrawal symptoms

Physical symptoms: muscle cramp, vomiting ,palpitation ,sweating ,cyanosis ,convulsion or coma.

Physiological symptoms

The symptoms can be stopped at once after administering the drug.

Harmful effects to the individual and society. The addict can do anything illegal to get the drug.

**(the lowest withdrawal effect is cannabis (al7shish) :s)**

**Drug habituation:** (عاده)

- A condition in which the individual feels a desire for the drug, without suffering any ill-effects and when such drug is not taken → Emotional instability. **(psychic only)** يعني انتي مثلا تعودتي تدخليين النت كل يوم فجأة خرب النت تحتضايقين وتترفرزين بس مارح توقف حياتك عادي ممكن تطلعين , تدرسين .
- There is **No** withdrawal symptoms, **No** tolerance and **No** physical dependence on the drug.

**Diagnosis of dependence :**

1. History from the addict, his relatives or friends.
2. Drowsiness, inability to concentrate. مين الدكتور عبد المعطي؟؟
3. Scars of injection along the veins of forearm, abscesses, ulcers and thrombophlebitis. Sometimes itching over the injection sites
4. Appearance of withdrawal symptoms if the drug was not taken in the last 24 hours. ياخذوا الولد في رحلة مفاجئة، ما عنده مصدر للدواء فتظهر الأعراض الانسحابية
5. Constriction of the pupils in case of opiates (Morphine) or dilatation after amphetamine (meth) and cannabis (الحشيش).
  - Nalline test for opiates: Injection of 3 mg Nalline leads to rapid **dilatation** of pupils. Remember the pupil originally constricted with opiates.  
Y3ni construction of pupil → rapid dilation after injecting 3 mg nalline = + test → addicted to opiates
6. Urine and blood analysis for the detection of the drug. في الكشف عن المشطات

### Cross-dependence:

- The ability of one drug to suppress the manifestations of physical dependence produced by another and to maintain the physically dependent state.
- It may be partial or complete and the degree is more closely related to **pharmacological effects** than to **chemical similarities**.  
يعني نجيب دوا بديل له نفس العمل مو شرط له نفس ال structure بس أقل خطورة
- **Y3ni** :Maintain the dependent state & prevent withdrawal symptoms.
- Cross-dependence has important clinical implications, since the withdrawal symptoms that occur with drugs with longer half-lives (Methadone, Phenobarbital, chlordiazepoxide) are generally less severe but more prolonged.
- This phenomenon is the basis for the *Substitution Treatment* of physical dependence for both Opioids and CNS depressants.

### **Drug to which dependence may develop all act on the CNS, some are more depressant, others more stimulant.**

- The drugs include:
  1. Opiates and their synthetic analogues and derivatives including morphine, heroin, codeine, methadone and pethidine.
  2. Coca leaves and cocaine.
  3. Ethyl alcohol.
  4. Barbiturates and other sedatives
  5. Amphetamine and related compounds.
  6. Tranquillizers.
  7. Volatile solvents e.g. acetone, toluene and carbon tetrachloride. (cause irreversible brain damage )
  8. Anabolic androgenic steroids  
(الرياضيين يأخذونه عشان العضلات أول ما يتركونه يصير لهم withdrawal)
  9. Designer drugs. Change the sides chain of the drug, so, it can't be detected by government ( Amphetamine)(change the structure) هذه الطريقة مستعملة في حرب الحكومات
  10. Nicotine ( smoking is the first step in addiction)

## 1- Opium dependence

(نبات الشخشاش زي الشمام فية زي الveins لونها اخضر .. لما يقطعوها ينزل زي اللبن  
لما ينترك فترة يصير لونة بني هذا هو ال opium الاصلي )

- ☞ synthetic analogues and derivatives including **morphine**, heroin (diacetylmorphine), codeine, methadone and pethidine.
- The condition may follow the repeated medical use of the drug.
- Addicts take the drug either by mouth, by smoking or by injection.
- Clinical picture:
  1. The patient becomes careless, unreliable and dishonest, Constipation but no much harm results from him.
  2. Loss of weight, anorexia and chronic constipation.
  3. Contracted pupils.

v.imp : The **BEST** characteristic feature of morphine is **PPP: pin point pupil** (constriction a9li )

### Withdrawal symptoms (Abstinence):

Long term use of morphine in cancer patient leads to addiction so the patient suffers from cancer pain & withdrawal symptoms of morphine.

- They usually start after 12-24 hours from the last dose, and then the symptoms disappear gradually within 7-10 days if the drug is stopped. حسب إرادة الشخص.
  - The symptoms are:
    1. Increased secretions. Sweating , sever diarrhea
    2. Increased respiratory and pulse rate.
    3. General muscular twitches (can lead to convulsion) and abdominal cramps.
    4. In severe cases, delirium, fever and severe mania.
- ☞ **Neonates from drug-dependent mothers may show withdrawal symptoms up to 56 hours from birth and will require therapy.**

### **Treatment: (General lines for all drugs)**

- ▶ The addict should be treated as a patient not as a criminal .
- ▶ Opium or morphine dependence is most difficult to treat, needing careful and continuous medical attention for several months in special hospitals or sanatoria (مصحة.)
- ▶ It is important to prevent the drug reaching the patient from outside .
- ▶ The success of treatment depends on the patient's intention & his co-operation (الإرادة).

### **a- Gradual withdrawal:** أصحاب الإرادة الضعيفة أو المدمنين لفترة طويلة

- ∞ as we said morphine → therapeutic dose =10mg  
→ recurrent use for long time → tolerance & addiction  
→ =100mg.

So we reduce the dose gradually till it reaches the therapeutic dose (10mg).

- ∞ Alternate morphine by **methadone** with the same dose or any other less addictive drug. (CROSS DEPENDANCE )
- ∞ Reduce the dose of methadone (10mg) . الثلث بالثلث

### **b-Abrupt withdrawal:** أصحاب الإرادة القوية يقطعونه مرة وحده

#### **depends on:**

1. Patient intends to stop
  2. Good health state: physical fitness.
  3. Short duration of addiction
  4. This dangerous and is very difficult in opiate addiction.
- The addict is kept under careful medical observation; heavy **sedation** is given.

### **c-Symptomatic treatment:**

- Treat the symptoms like Vit. Deficiency , constipation ,anorexia or dehydration.

### **d-Psychiatric treatment.**

### **e-social measurements.** دور الأخصائية الاجتماعية، إذا ما عنده وظيفة أو ما عنده كاريير !!

## 2- Cocaine dependence

Addicts take cocaine by chewing the leaves of **coca plant(natural)**, injection or snuffing its powder which may be **adulterated** (not pure مخطط) with irritating substances as boric acid ,salicylic acid, صراصير, جماجم مدقوقة, قفاز , or talc powder hence nasal septal perforation may occur.

Y3ni : 1- cocaine effect on CNS → stimulation followed by depression  
2- snuffing cocaine with irritating sub. Like talc powder → irritation → no protective mechanism bcoz the effect of cocaine (depression ) → nasal septal perforation . ما يحس بالألم لأنه الكوكايين أصلاً مسكّن.

### Clinical picture:

1. Anorexia, vomiting and loss of weight.
2. Tremors, convulsions and toxic psychosis.
3. Nasal septal perforation if taken as snuff.
4. **Tactile hallucinations**; the addict feels as if insects were creeping under the skin (cocaine-bugs). بيحس بثعابين تمشي في جسمه.
5. Moral deterioration, the addict is aggressive and may be dangerous.
6. Cocaine →hypertension →cerebral hemorrhage.

V.IMP :The BEST characteristic feature of cocaine addiction as **clinical picture** is : **Tactile hallucination**.  
the BEST characteristic feature of taking cocaine by **snuffing** is : **nasal septal perforation** .

### Treatment:

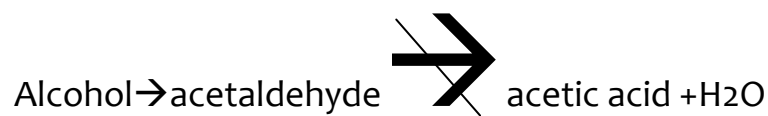
- Abrupt withdrawal is safe because the withdrawal symptoms are less serious than those in morphine dependence.
- Benzodiazepine to sedate patients suffering from convulsions and toxic psychosis.
- Psychiatric and symptomatic treatment.

### 3-Alcohol dependence

- General appearance: Red nose and cheeks due to vasodilatation.
  - Conjunctivitis and bronchitis due to vitamins A deficiency.
  - Chronic gastritis with hypochlorhydria.
  - ☞ Cyanide → paralyze cytochrome oxidase enz → needs acid (HCL) to work ..  
3ashan ketha al alcoholic lama ya5th cyanide ma ymoot l2no alcohol  
by3mel Achlorhydria .
  - Liver cirrhosis due to protein and vitamins deficiency.
  - Fine tremors and peripheral sensory neuritis.
  - Alcoholic paranoid states and Korsakoffs psychosis. يفقد الذاكرة الحديثة.
  - The addict becomes selfish and jealous.
- ❖ Korsakoffs psychosis:
- Chronic alcoholic
  - Head injury
  - Vit.B1 deficiency (thiamine)

#### Treatment:

- Hospitalization is very important and life saving.
- Sudden (abrupt) is preferred to gradual withdrawal of the drug.
  1. **Diazepam** (10mg) if there is convulsion or **chlorpromazine** for sedation .
  2. **Lumbar puncture** for delirium tremens. هذايان
  3. **Mannitol** for cerebral edema.
  4. **Vitamin B** and liver supports.
  5. Ant abuse (disulfuram):



- ✘ This drug is given orally. The drug interrupt the oxidation of alcohol at the stage by Inhibits Acetaldehyde dehydrogenase → results in Acetaldehyde accumulation and given the feeling of distress(N,V),cyanosis, metallic taste , palpitation and vomiting.
- ✘ This makes the addict hate to drink alcohol.

The **most common** complication , most fatal & most dangerous in alcohol addiction is :

**Liver cirrhosis**

## 4-Barbiturate dependence

- **Short acting** (not long) barbiturates are used by the addicts due to rapid appearance of the effect.
- Barbiturates **dependence is very serious** as heroin dependence.
- **Clinical picture:**
  - 1) **Physical signs:**
    - Anorexia, constipation and skin rashes.
    - Anemia, Cyanosis, Renal manifestation can lead to renal failure .
  - 2) **Neurological signs:**
    - Tremors, Thick slurred speech (كلامة ثقيل) , Ataxia (المشي يترنج)
    - Nystagmus
    - Dysdiadochokinesis: involuntary movement can't preformed regularly )
  - 3) **Mental disorders:**
    - Poor memory - mental confusion.
    - Negligence of personal appearance. في كل الناس المدمنين.

### Withdrawal symptoms

- Nausea and vomiting.
- Tachycardia and low blood pressure
- Fever and rapid respiration.
- Confusion and convulsions. -Delirium.

### Treatment:

- The addict must be hospitalized.
- Abrupt withdrawal is **dangerous**. مرة مهمه لأنه ممكن يأنر على المخ.
- Gradual withdrawal is the ideal method.
- Start with a dose of 500 mg/5 hours, then the dose is gradually decreased to 100 mg/day until withdrawal is complete in 2-3 weeks.



## 5- Amphetamine dependence

- Amphetamines and many closely related compounds, including methylamphetamine, benzphetamine and other, have a marked **stimulant** effect on the CNS including a sense of alertness and well being. << (Commonly used by student)
- They have been used in the treatment of narcolepsy and as anorectic agents, though the less stimulant analogues such as fenfluramine are often preferred.
- Tolerance may develop with chronic use of amphetamine and given rise to dependence on the drug. This problem was first noted in Japan over 25 years ago.
- **Clinical picture:**
  - Anxiety and tremors.
  - Cerebral hemorrhage, cause of HTN
  - Palpitations.
  - Visual and auditory hallucinations. اصوات أشجار وعصافير خيالية أو تشوف شي خيالي
  - Shock or collapse, especially when vigorous exercise is undertaken.
  - Behavior changes in the from of antisocial activities.

طالبة في سنة ثاني طب في مصر توفت  
قبل اختبار الـ **Anatomy** لأنها أخذت كمية كبيرة  
من الـ **Amphetamine**

The **best character** of clinical picture in amphetamine addiction is :  
**Visual and auditory hallucinations**

### Withdrawal symptoms:

- Somnolence.
- Tremors.
- Sever fatigue.
- Risk of suicide.

### Treatment:

- **Abrupt withdrawal. If not used for long time**
- Sedation with phenobarbitone or chlorpromazine.
- Psychiatric therapy.

## 6- Tranquilizer dependence

- Prolonged use of minor (not major) tranquilizer → Rapid effect.
- E.g. valium (Diazepam) and meprobamate.
- **Clinical picture:**
  - Depression,
  - Masked face
  - Dry mouth
  - Dilated pupil
  - Hypothermia

The most characteristic clinical pic. In tranquilizer addiction is :  
**Masked face** (مافي أي تعابير)

## 7- Volatile solvent inhalation

- Inhalation of volatile organic solvents (Acetone, carbon tetrachloride, chloroform, ether, Toluene, n-Hexane) for pleasurable effects ( solvent abuse, solvent sniffing or glue sniffing)
- Most commonly found among poor young male.
- These compounds are highly lipid soluble and therefore have marked effects on nervous tissue.
- The substance is usually applied to a piece of cloth and held near the nose or emptied into a plastic bag and held over the nose and mouth.
- Elimination from the body is **mainly** through the respiratory system, but some solvents are metabolized in the liver.
- Snuffers are unlikely to come to medical attention (not because of dependence) But, they develop some serious acute complication such as deep coma.
- However, they may present later with:
  - Jaundice
  - Renal failure,
  - **Acute encephalopathy,**
  - Cerebellar degeneration ,
  - Mixed polyneuropathy.

The most serious complication of solvent is:

- a. Jaundice
- b. Renal failure
- c. **Acute encephalopathy\***

## Treatment

- Stopping solvent inhalation. ( most important)
- Sedation if there is a state of panic in over dose case.
- Comatosed patient require supportive measures to ensure a clear airway and adequate oxygenation.
- Renal and hepatic damage may be reversible but **neurological complications are unlikely to improve** significantly.
- Abstinence from further solvent abuse is vitally important.

## 8- Anabolic androgenic steroid

- Male hormone taken by **athletes** (الرياضيين) to build their muscles.  
**If Used for long time with high dose, There's withdrawal symptoms.**

### Clinical picture:

- Renal failure, hepatic failure
- Gradual harmful effect

## 9- designer drugs

Change the sides chain of the drug, so, it can't be detected by government ( Amphetamine)

## 10- nicotine

Done 😊

**GOOD LUCK**

*Reham almuhaya*