#### **A- Transudates**

- 1- Excessive accumulation of fluid in a body cavity or as oedema.
- 2- Causes of formation of transudates are
  - 1- Increased pressure in venous capillaries that lead to increased capillary permeability.
  - 2- Increased capillary permeability due to toxin.
  - 3- Hypoproteinemia.
  - 4- Obstruction of the lymphatic return such as occurs with tumor.
- 3- The transudate is known under different terms, depending upon its location:
  - a- Hydrothorax

in thoracic cavity

- b- Hydropericardium
- c- Hydroperitonia
- in pericardial sac in peritoneal cavity
- 4- Collection of sample

At least 10 ml of fluid should be aseptically obtained.

- 5- Physical examination:
- 1- Color
- a- Light to dark depend upon the amount of bilirubin present and serum or plasma present.
- b- Red to dark red or reddish brown: It mean present of erythrocytes.
- c- White creamy or yellow or gray or green : present of leukocytes .
- d- Milky white to green : it mean chyle.



2- Turbidity

 $Clear \longrightarrow normal$ 

Turbid  $\longrightarrow$  infection

3- Coagulation: rarely show spontaneous complete or partial coagulation.

4- Odor: usually odorless unless combined with putrefactive change.

5- Specific gravity: determined by hydrometer as used in urinalysis. The normally under 1.017.

6- Chemical examination

Protein : determined as for plasma protein (Biuret method). Content is less than 3 g / dl.

7- Cytological examination

1- Totally cells count (WBC), normally less than 100 cell/ mm<sup>3</sup>.

2- Differential cells count by make thin film of transudate on slide stained by giemsa or leishman stain.

If fluid thin and watery centrifuge of fluid and make smear from sediment .

Examined under oil immersion and the result are: Few erythrocyte or endothelial cells or few lymphocyte or tumor cells.

8- Bacteriological examination: negative



#### **B-Exudate**

Excessive accumulation of the fluid in the body cavities, It inflammation in origin.

Causes:

- 1- Infection: bacterial, fungal, viral, parasite.
- 2- Trauma: physical, chemical, thermal injuries.
- 3- Sterile inflammation or foreign body.
- 4- Neoplastic disease.

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- 2- Collection of sample
- 1- Collection of the sample under aseptic condition.
- 2- It is preferable to add anticoagulant to prevent coagulation.
- 3- Physical examination
- 1- Color: gray to light yellow depending upon causative agent.
- 2- Turbidity: depend upon number of suspended cells.

3- Coagulation: coagulation of exudate usually just after collection, coagulation may be prevented in case of purulent inflammation due to destruction of fibrin by cellular enzymes or bacteria.

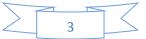
4- Odor: odorless unless combined with putrefactive bacteria.

5- Specific gravity: more than 1.017 due to greater protein content .

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4- Chemical examination

Protein : more than 3 g / dl.



5- Cytological examination

- 1- Total cells count is over 50000 cell/  $mm^3$ .
- 2- Polymorphnuclear leukocyte predominant followed by lymphocytes and monocytes.
- a- Purulent exudate: the neutrophils are predominant.
- b- Chronic exudate: lymphocytes predominate.
- c- Allergic or parasitic: eosinophils predominate.

## 6- Bacteriological examination: determine the causative agents.

		BITUDE(UTU XPUT	
		Transudate	Exudate
1-	Appearance	Clear	cloudy
2-	Coagulation	Non	Clot spontaneously
3-	Specific 77	Less than 1.017	Above 1.017
	gravity V		
4-	cells	Few endothelial cells with	Neutrophils or lymphocytes
		small lymphocytes and	
		erythrocyte	ntipapyiantiadite
5-	Bacteria	absent	present
6-	protein	Less than 3 g/ dl	More than 3 g/ dl

### Summary between exudate and transudate :



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