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Prolouge: Initial Approach to Edema

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1. Introduction

Edema is one of the most underrated signs that can be found in many patients. The first step is to understand what edema is in order to give this sign the importance we should. It can be caused by many different situations, so once we find it, we must study our patient completely in order to reach an adequate diagnosis and start treating our patient correctly.

Edema is the swelling from fluid accumulation at the intercellular tissue originated from the abnormal expansion of the interstitial fluid volume. Fluid at the interstitial and intravascular space is regulated by the gradient between the hydrostatic and the oncotic capillary pressures, so when this balance is altered by local or systemic situations, this fluid begins to accumulate [1].

2. Patient history

The approach to edema must begin with a complete interrogation of the patient's background. The history must include the date of the first symptoms, if edema is altered by position, if it is unilateral or bilateral, history of previous chronic diseases, substance abuse, drugs used by the patient, and any other symptoms related to the appearance of edema. With these simple questions, we can get an initial idea of the diagnosis.

The acute onset of edema of less than 72 hours is more characteristic of deep venous thrombosis, cellulitis, popliteal cyst rupture, acute compartmental syndrome, or the use of calcium channel blockers. Also, stasis can play an important role in this acute setting as in venous insufficiency, venous obstruction, or lymphatic obstruction. On the other hand, the chronic onset of edema can be seen with the appearance or as a complication of chronic diseases like chronic cardiac insufficiency, pulmonary hypertension, and thyroid, renal, or hepatic disease.

3. Physical exam

We must include a complete physical exam in every patient, in order to investigate and rule out every possible cause of edema. For example, if we are thinking the cause of edema in our patient to be cardiac insufficiency, we must look for rales or crackles, dyspnea, cyanosis, or any other sign or symptom. Our efforts should always be focused on investigating each new sign we can find, so we can further investigate them until we have the correct diagnosis.

4. Diagnosis

Once we have an idea of the possible cause of edema, we can complete our investigation with some specific studies, like complete blood count, electrolytes, hepatic enzymes, albumin, creatinine, urine analysis, glucose, and thyroid stimulating hormone [2]. Other additional and specific tests should be indicated depending on the clinical presentation, for example, if we are thinking in a cardiac etiology, we should order an electrocardiogram, echocardiogram, and chest radiograph. Another common study in certain cases when we are thinking of a lymphatic origin is a lymphoscintigraphy which can be helpful to distinguish lymphedema from venous edema and determine the cause of lymphedema. We have to keep in mind every possible situation causing edema as we can see in **Figure 1** [3].

Figure 1.
Algorithm for the diagnosis of edema.

5. Treatment

The treatment plan is set once we have an accurate diagnosis [4].

6. Conclusions

As any other signs or symptoms we can think of, edema should be thoroughly investigated. In this book, we will find a comprehensive overview of the

mechanisms and pathophysiology of edema formation and the signs and symptoms which can be seen in the different types of edema so we can reach an accurate diagnosis in order to establish the adequate treatment of this specific situation.

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