7.7: Assessment

The pattern of high values of \([\text{HCO}_3^-]\) and \(p\text{CO}_2\) occurring together suggests either a metabolic alkalosis or a respiratory acidosis (or both). If \(p\text{CO}_2\) is over 60mmHg, the metabolic alkalosis is either very severe or there is a mixed disorder with a respiratory acidosis.

Metabolic alkalosis is suspected if one of the known causes of the disorder is present especially vomiting, nasogastric suction, pyloric obstruction, excess mineralocorticoid syndromes or diuretic use.

The \textit{delta ratio} can be a useful adjunct in detecting the presence of a second acid-base disorder in patients with a metabolic acidosis. In patients who have a metabolic acidosis and a chronic metabolic alkalosis the delta ratio has a value greater then 2. Such a high value can also occur in patients with a pre-existing chronic respiratory acidosis because the bicarbonate is also elevated in that disorder as well. Because of potential errors, the delta ratio should be assessed cautiously.

**Practical Hints for Bedside Diagnosis of Metabolic Alkalosis**

Most cases are easy to diagnose on history and then can be confirmed on arterial blood gases. In patients with mixed acid-base disorders, the structured approach to assessment (discussed in Chapter 9), will usually result in a correct diagnosis.

The most common causes (90% of cases) are:

- Vomiting (or NG tube drainage)
- Diuretic use

Other causes should be mostly obvious (eg post-hypercapnoeic alkalosis in ICU, post-massive
transfusion).

If you're still stuck for a diagnosis:

- Spot urine chloride is useful here: low levels suggest Cl\(^-\) depletion and need for replacement; high levels suggest adrenocortical excess and need for K\(^+\) replacement
- Consider surreptitious diuretic use in females as there is a certain group who abuse diuretics for 'weight loss'. (Urine Cl\(^-\) may be high or low depending on timing of last diuretic dose)
- If nothing more obvious is apparent, don't forget about adrenocortical excess syndromes which are rare but do occur.
- Don't let diagnostic quibbles delay replacement of K\(^+\) if needed as low [K\(^+\)] can be life-threatening (& may be worsened by treatment!)