

INTRODUCTION

Iron Deficiency (ID) is common in patients with solid tumors or hematological malignancies, especially during chemotherapy. French Guidelines of National Health Authority (HAS) published in 2011 and 2022 [1;2] recommend testing for ferritin and transferrin saturation (TSAT) index during iron deficiency workup. This study aims to assess for the laboratory testing practices for ID diagnosis in our referral cancer hospital as defined by HAS guidelines and to evaluate ID prevalence in our patients according to the European Society for Medical Oncology (ESMO) Guidelines [3].

METHODS

We performed a retrospective analysis of laboratory biochemical workups for ID as ordered by the physicians in Gustave Roussy Cancer Campus during the second half of 2021. When prescriptions were appropriate, we looked to the prevalence of ID according to ESMO Guidelines: serum ferritin concentration <100 µg/L and/or a TSAT index <20%.

RESULTS

4713 prescriptions for ID tests were collected. Only 74% (n=3488) of prescriptions ordered for, at least, ferritin level (Figure 1) including 35% (n=1650) of prescriptions for both ferritin and TSAT and 39% (n=1838) of prescriptions for ferritin without TSAT. Some prescriptions (26%) involved non-recommended parameters, i.e. measurement of serum iron concentration alone or transferrin alone.

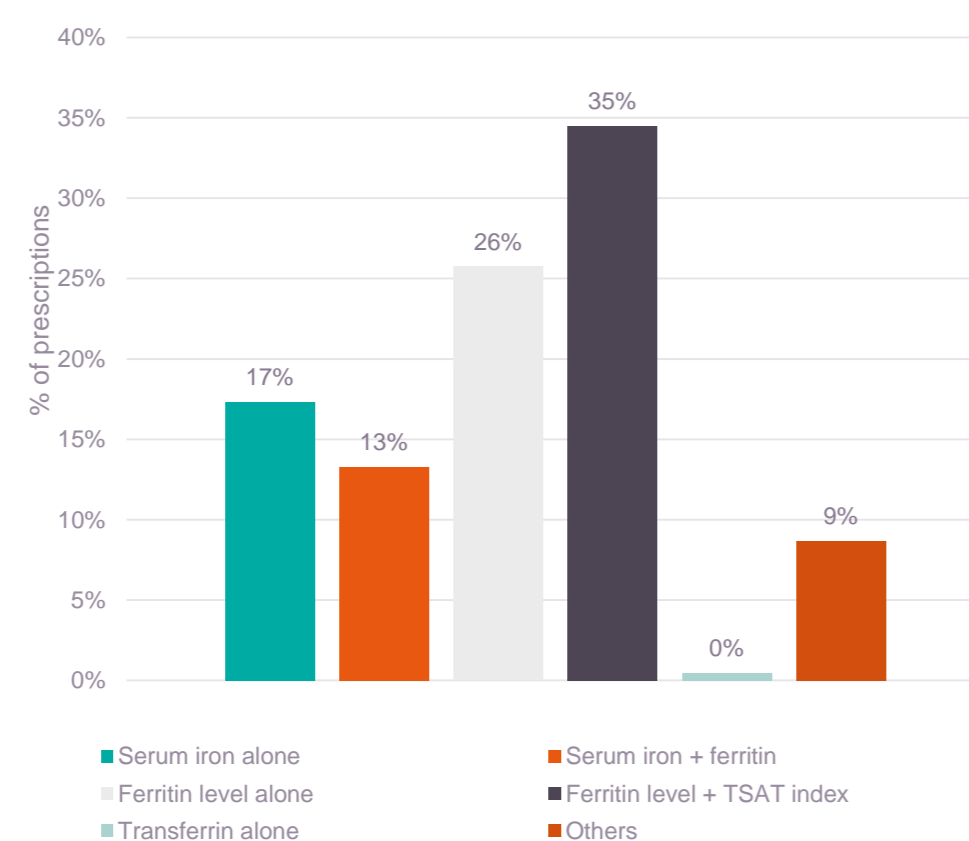


Fig. 1: laboratory testing for iron deficiency as ordered by the physicians

68% of our patients were found to have ID (Figure 2). 36% of our patients had an absolute ID and 32% were found to have a functional ID.

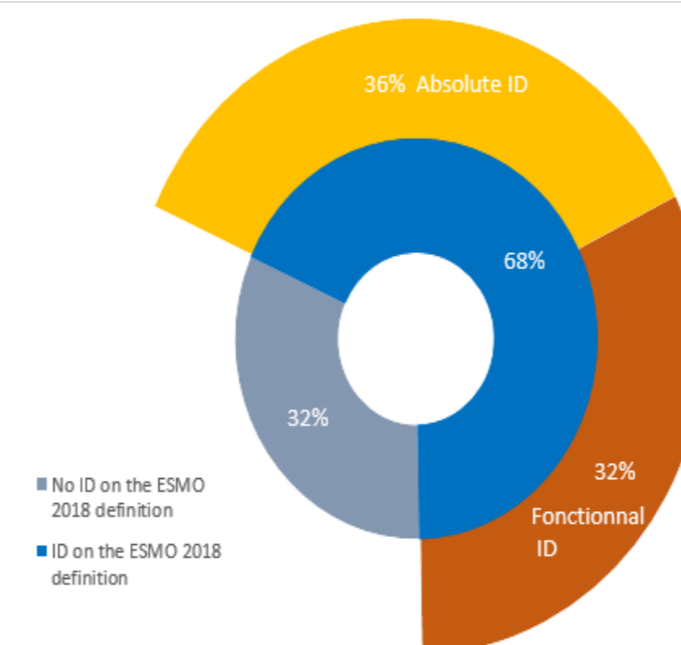


Fig. 2: iron deficiency prevalence based on ESMO 2018 definition

To get an accurate diagnosis of iron deficiency, we have implemented 2 actions in the laboratory :

- Systematic addition of missing analyzes to enable the diagnosis of iron deficiency
- Automatic generation of an iron deficiency interpretation comment on the report according to 2018 ESMO guidelines (figure 3).

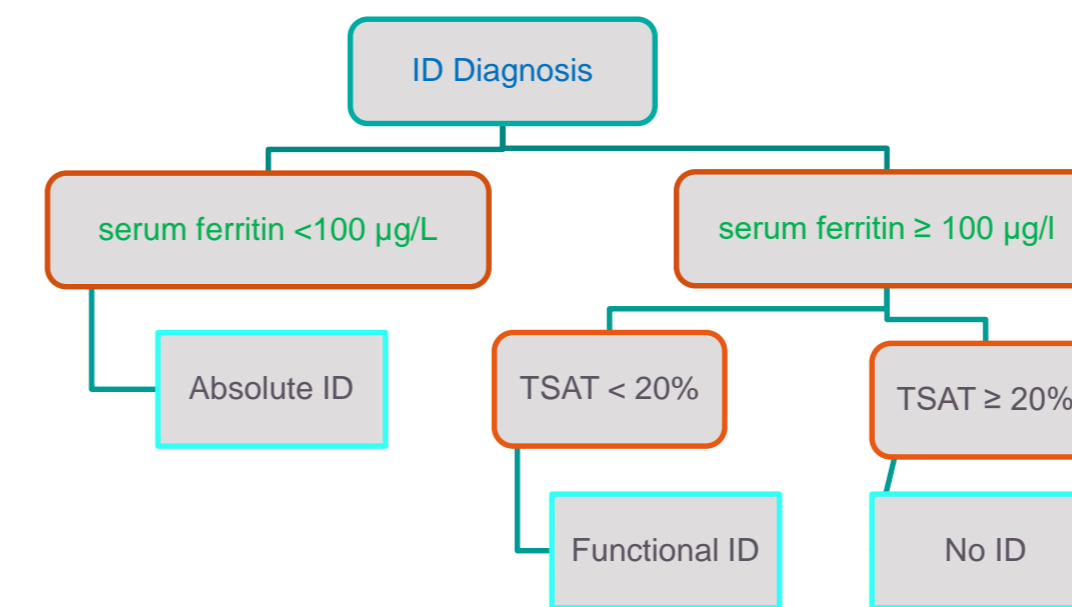


Fig. 3 : Management of ID diagnosis

3 months after those actions, we re-evaluated the prevalence of iron deficiency in 1208 patients (Figure 4). We observed a decrease in Iron Deficiency diagnosis (58% versus 68% before adjustment of medical prescriptions) which was therefore probably over-diagnosed due to a lack of appropriated prescriptions. These results are consistent with the prevalence (57,9%) reported in the French national prospective survey Carenfer Onco [4].

Furthermore, even if the prevalence of AID had slightly decreased (33% versus 36%), it is 1,3 more frequent than of FID (25%) in our institution. These results, in contradiction with other studies [4,5], require further investigation, taking into account the type and stage of the pathology and treatments.

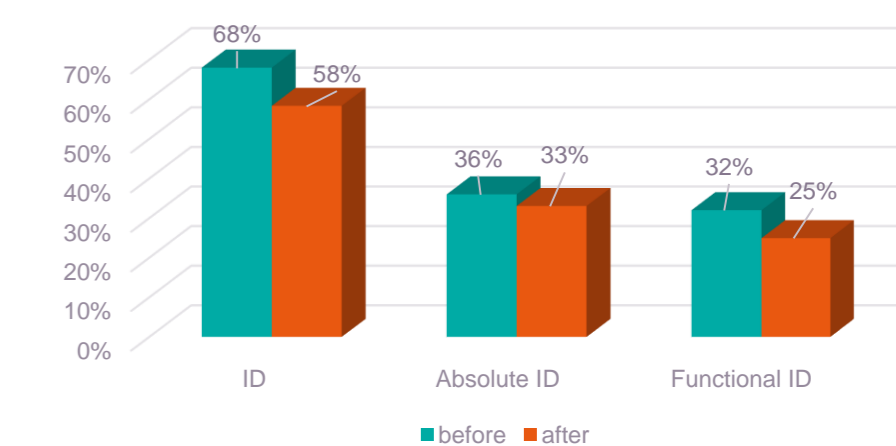


Fig. 4: Prevalence of iron deficiency before and after modification of prescriptions according to our guidelines

CONCLUSION

These results confirm the need for the combined use of both biomarkers ferritin and TSAT to obtain an accurate diagnosis of iron deficiency and for a systematic screening for iron deficiency in cancer patients in order to quickly start treatment, which avoids the appearance of clinical signs such as fatigue, a side effect frequently observed in oncology, and anemia. We will continue the study by reminding clinical practice guidelines and then monitor the impact this will have by following the treatment indicators.

REFERENCES

- [1] https://www.has-sante.fr/upload/docs/application/pdf/2011-11/texte_court_bilan_martial_carence_2011-11-09_17-22-2_135.pdf
- [2] https://www.has-sante.fr/upload/docs/application/pdf/2022-09/algorithmes_utilisables_pour_le_diagnostic_et_la_classification_de_lanemie_dans_la_periode_preoperatoire.pdf
- [3] Aapro M et al. Management of anaemia and iron deficiency in patients with cancer: ESMO Clinical Practice Guidelines. Ann Oncol. 2018 Oct
- [4] Luporsi E. et al. Iron deficiency in patients with cancer: a prospective cross-sectional study. BMJ Supportive & Palliative Care. 2021
- [5] Ludwig H et al.. Prevalence of iron deficiency across different tumors and its association with poor status, disease status and anemia. Ann Oncol. 24 : 1886-1892, 2013