

PURPLE URINE BAG SYNDROME: THE ART OF PURPLISH MIX OF BLUE AND RED

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Abstract

Purple urine bag syndrome (PUBS) is an exceptional finding in the clinical setting and is featured by its distinctive purplish urine discoloration. It has been claimed to be due to many culprits, namely, long term indwelling catheterisation, dementia, and urinary tract infection with alkaline urine that is fully loaded with bacteria, bed or chair bound patients, female gender, constipation and chronic kidney disease (Sabanis et al, 2019). It is seen more in the geriatric words. It is said that it's related to tryptophan aberrant metabolism by-products in red and blue pigments, due to bacterial colonization in urinary catheter. Its distinctive colour is due to indigo-producing (bluish) and indirubin- producing (reddish) pigments which react with the plastic tube, to yield the striking purplish colour (Van Keer et al, 2015, Kalsi et al, 2017).

The Purple urine bag syndrome process starts with tryptophan metabolism by the intestinal bacteria such as proteus mirabilis, and will be converted into indoxyl sulfate in the liver then catalyzed by the bacterial phosphatases or sulfatases to indoxyl, and later in the urine it will be converted to two pigments namely indigo and indirubin, to give the distinctive purplish colour of the urine bag (Figure 1).

Differentials for this condition can be haematuria, haemoglobinuria, myoglobinuria, nephrolithiasis, UTIs, food dyes, drugs, poisons, porphyria, and alkaptonuria. Also, beets, carrots, and blackberries can cause urine discolouration (Kalsi et al, 2017). The lists can be endless.

Figure 1: Purple Urine Bag



Photo courtesy of Dr Milad [®]

There are multiple implicated bacteria in this condition (Figure 2) (Ribeiro et al, 2004, Hadano et al, 2012, and Carmo et al 2019).

Figure 2: the implicated bacteria

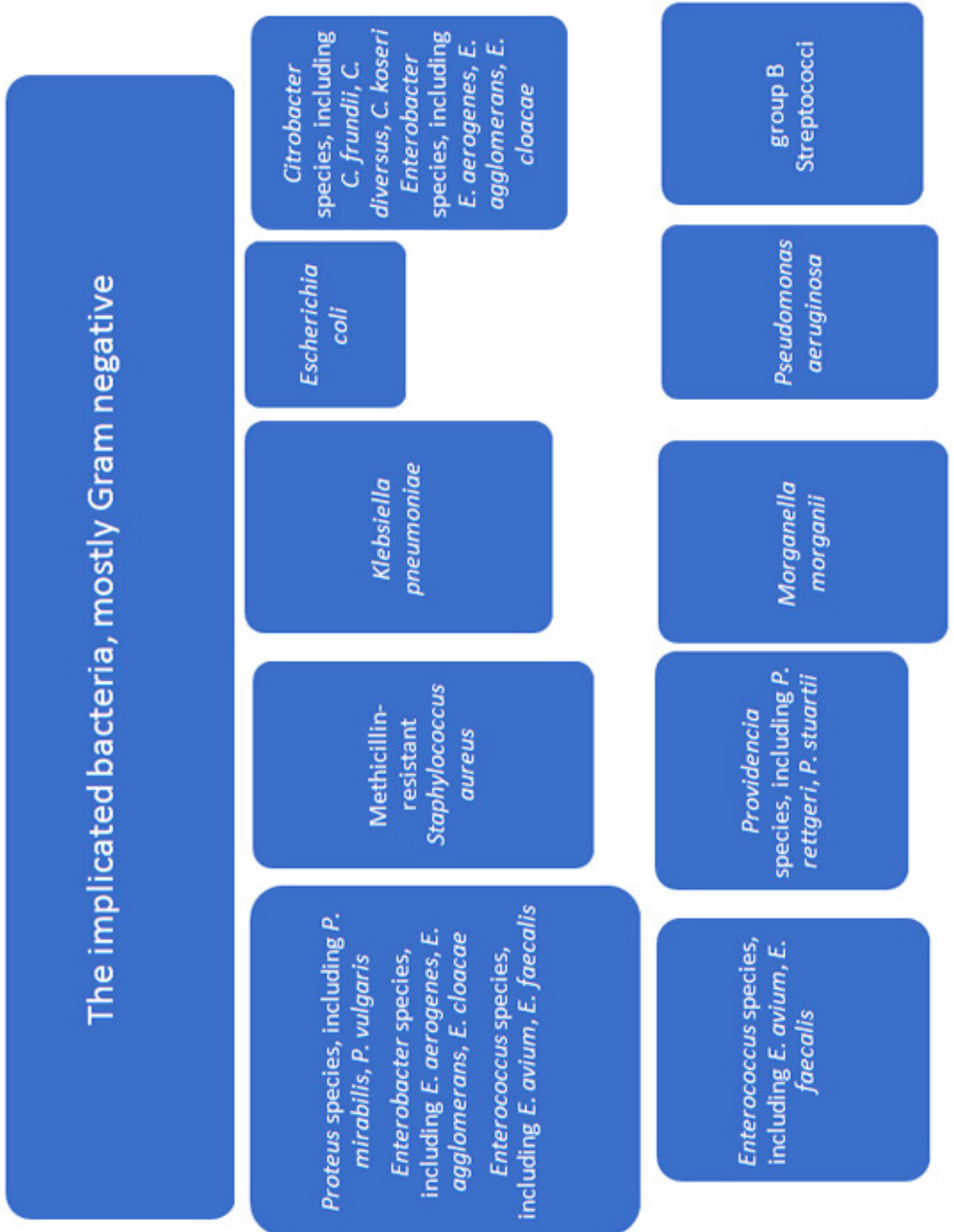
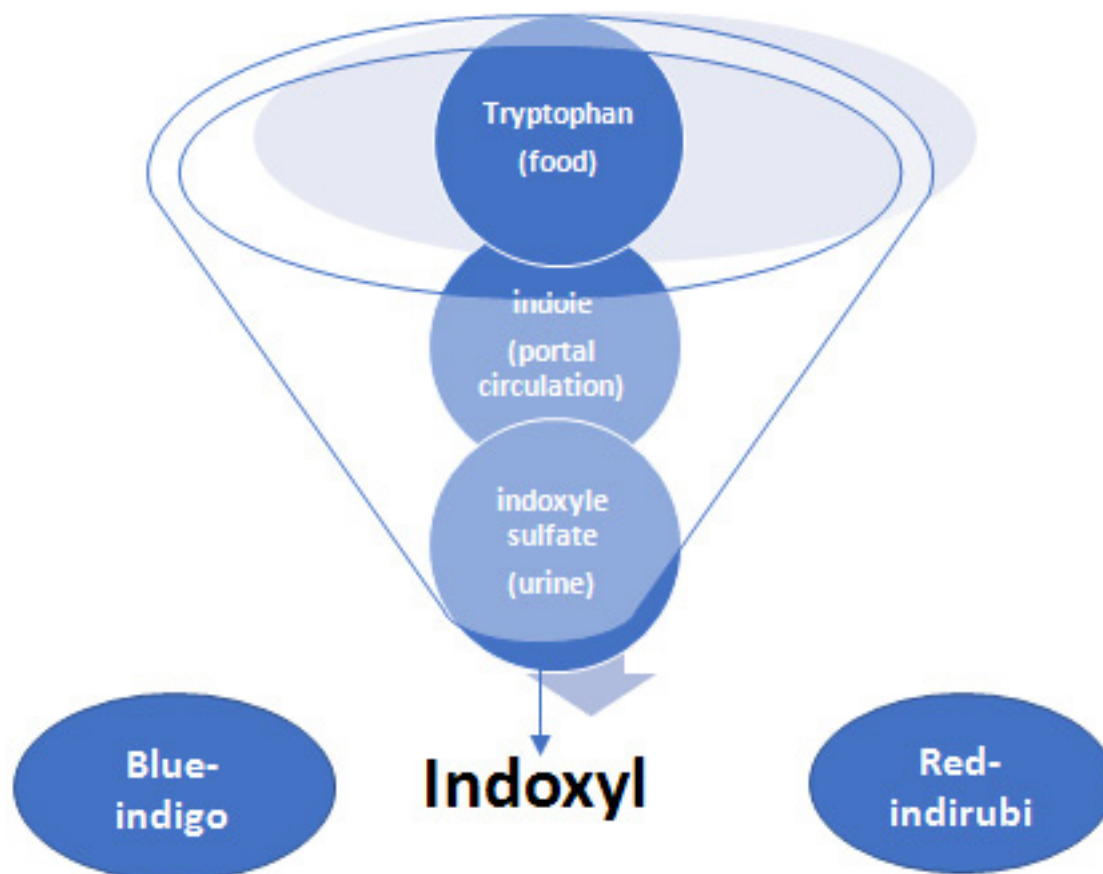


Figure 3: Process of purple urine production



Purple urine bag syndrome is a totally benign symptomless condition, but warrants attention to keep a close look at those cases. Nevertheless some health care professionals including doctors aren't aware of it and could lead to misdiagnosis of haematuria and hence over-management. Unnecessary catheters should not be kept in use for long as there is a claim they cause severe Fournier's gangrene in immunocompromised patients, plus the distress to the patients, and those surrounding the patient from the distinctive colour (Hadano et al, 2012). Therefore, reassure the patients that there is nothing to worry about. Also, it is advisable to change the catheter in those cases at least once per month to avoid this condition and lower the chance of urine bacterial infection.

The purpose of this short briefing is to create a better understanding of this condition among physicians and healthcare givers, and to serve as a reminder to remain watchful and vigilant to such cases, in order to receive a better outcome without exhausting the health resources unnecessarily (Saraireh et al, 2021), as in fact the current society is fledged of seniors who might be admitted for long time in hospitals for other ailments. The existing literature has reported around 174 cases. A few cases have died of septicaemia and aspiration pneumonia, and hence clinical assessment of each case is mandatory in order to not avoid a potential risky infection (Shin et al, 2018).

The first reported case was in 1978 in a geriatric hospital. Also, it has been said that King George III had this condition due to constipation as well.

References

- Sabanis N, Paschou E, Papanikolaou P, Zagkotsis G. Purple Urine Bag Syndrome: More Than Eyes Can See. *Curr Urol*. 2019 Nov;13(3):125-132. doi: 10.1159/000499281. Epub 2019 Nov 13. PMID: 31933590; PMCID: PMC6944938.
- Hadano Y, Shimizu T, Takada S, Inoue T, Sorano S. An update on purple urine bag syndrome. *Int J Gen Med*. 2012; 5:707-10. doi: 10.2147/IJGM.S35320. Epub 2012 Aug 22. PMID: 22969302; PMCID: PMC3437914.
- Saraireh M, Gharaibeh S, Araydah M, Al Sharie S, Haddad F, Alrababah A. Violet discoloration of urine: A case report and a literature review. *Ann Med Surg (Lond)*. 2021 Jul 16; 68:102570. doi: 10.1016/j.amsu.2021.102570. PMID: 34354830; PMCID: PMC8321942.
- Ribeiro JP, Marcelino P, Marum S, Fernandes AP, Grilo A. Case report: purple urine bag syndrome. *Crit Care*. 2004 Jun;8(3):R137. doi: 10.1186/cc2853. Epub 2004 Mar 31. PMID: 15153241; PMCID: PMC468902.
- Carmo FPTD, Caliman AO. Purple urine bag syndrome: case report. *Einstein (Sao Paulo)*. 2019 Sep 23;18:eRC5063. doi: 10.31744/einstein_journal/2020RC5063. PMID: 31553357; PMCID: PMC6905158.

Kalsi DS, Ward J, Lee R, Handa A. Purple Urine Bag Syndrome: A Rare Spot Diagnosis. *Dis Markers*. 2017;2017:9131872. doi: 10.1155/2017/9131872. Epub 2017 Nov 29. PMID: 29317791; PMCID: PMC5727662.

Shin KS, Kim MY, Kang HN. Purple Urine Bag Syndrome in Geriatric Hospital: A Report of 2 Cases. *Ann Geriatr Med Res*. 2018 Sep;22(3):151-153. doi: 10.4235/agmr.2018.22.3.151. Epub 2018 Sep 30. PMID: 32743265; PMCID: PMC7387583.