Universitat Autònoma de Barcelona

2023/2024

Immuno-hematology

Code: 44438
ECTS Credits: 9

Degree	Type	Year	Semester
4317563 Transfusion Medicine and Cellular and Tissue Therapies	OB	0	1

Contact

Name: Joaquim Vives Armengol

Email: joaquim.vives@uab.cat

Teaching groups languages

To check the language/s of instruction, you must click on "Methodolody" section of the course guide.

Teachers

Eduardo Muñiz Diaz

Masja de Haas

Prerequisites

Level B2 or equivalent in English.

Objectives and Contextualisation

In this module, dedicated to immunohaematology, its theoretical bases will be studied, the blood groups (their classification, structure and function). An in-depth study will be made of diseases such as neonatal alloimmune thrombocytopenia, haemolytic disease of the new born, foetal alloimmune thrombocytopenia, and neonatal autoimmune neutropenia.

Serological and molecular techniques will be included for the study of red blood cell antibodies, platelets and granulocytes. The phenotype and genotype of the different blood groups, as well as the HLA system, will also be studied.

Competences

- Define laboratory strategies for the diagnosis of haemolytic disease, immune cytopenias, haematological and other immune- (side) effects of the transfusion.
- Integrate scientific and technical knowledge in accordance with a commitment to ethics and the code of conduct.

- Knowledge and understanding that provide a basis or opportunity for originality in developing and / or applying ideas, often in a research context.
- Take reasoned decisions based on critical, objective analysis.
- That the students can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.

Learning Outcomes

1. Create an algorithm according to each case.
2. Integrate scientific and technical knowledge in accordance with a commitment to ethics and the code of conduct
3. Knowledge and understanding that provide a basis or opportunity for originality in developing and / or applying ideas, often in a research context.
4. Take reasoned decisions based on critical, objective analysis
5. That the students can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
6. Understand the fundamentals of immunohaematology and the basic techniques used for the diagnosis of immunological processes related to erythrocytes, granulocytes and platelets.
7. Understand the use of the HLA system and its relationships in the context of distinct diseases.

Content

1. Red blood cell groups.
2. platelet groups.
3. granulocyte groups.
4. HLA system.

Methodology

The methodology for this course is active and constructive. It does not only contemplate the content but also reading, reflecting and applying knowledge to reasonably close situation to create meaningful learning.

Students will work on real life examples and case studies, reflecting on complex and relatively unstructured situations to find adequate solutions.

Faithful to the proposed methodology, students form the centre of the learning process and generate knowledge by interacting significantly with their peers, with the teaching materials and with the environment. This programme not only teaches training in a virtual environment but also allows them to experience their learning every day.

At the beginning of the unit, the teacher will present a learning plan to the group with specific objectives, learning activities, the necessary resources and recommended deadlines for each activity.

The dates for carrying out the activities are recommended in order to be able to follow the course. The only fixed dates are the beginning and end of each teaching unit. This means that students can do their own planning but they must respect the dates for the beginning and the end of each unit.

Students are recommended to work in a continuous and consistent manner and not allow tasks to accumulate around the deadlines, which may lead to haste, undue time pressure and not allow the students to enjoy their learning or carry out additional reflections. Also the course offers group activities which require synchronisation among the group.

Some of the activities must be send online to the teacher for assessment and receive feedback of progress. Teachers will return the work with comments and together the students can continue to think and learn. The deadline for each of these activities is the end of the teaching unit. Other activities will consist in discussion and working together in shared spaces.

The primary language used during the course will be English. However, the use of Spanish will also be allowed. The course materials will also be in English.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Discussions	20	0.8	2, 3, 4, 5, 6
Type: Supervised			
Elaboration of Projects	20	0.8	1, 2, 3, 4, 5, 6, 7
Virtual Cases/Problem Solving	20	0.8	1, 2, 4, 5, 6, 7
Type: Autonomous			
Personal Study	30	1.2	2, 3, 4, 5
Reading Articles/Reports of Interest/Videos	30	1.2	2, 3, 4, 5
Test/Scheme	30	1.2	2, 3, 4, 5

Assessment

The module will be assessed on the following activities:

1. Exercise 1: Design a comparative study of the prophylactic programmes with anti-D immunoglobulin in different countries. This activity counts for 5% of the final grade.

2. Exercise 2: Describe the procedures for prenatal testing in the country of the student. This activity counts for 9% of the final grade.

3. Exercise 3: Two case studies (AIHA and HDN). This activity counts for 13.5% of the final grade.

4. Exercise 4: Individual multiple-choice test. 13.5 % of the final grade.

5. Exercise 5: Open discussion. This activity counts for 9% of the final grade.

6. Exercise 6: Two case studies (FNAIT and RPT). This activity counts for 4% of the final grade.

7. Exercise 7: Open discussion. This activity counts for 8% of the final grade.

8. Exercise 8: Individual multiple-choice test. This test counts for 4% of the final grade.

9. Exercise 9: Open discussion. This activity counts for 4% of the final grade.

10. Exercise 10: Case study (ANG). This activity counts for 5% of the final grade.

11. Exercise 11: Individual multiple-choice test. This test counts for 5% of the final grade.

12. Exercise 12: Individual multiple-choice test. This test counts for 20% of the final grade.

Single evaluation

1. Multiple choice test. Capacity to uniderstand the diversity of blood groups and the HLA system and its implications in transfusion and transplantation. This test counts for 100% of the final grade. The same retrieval system as for the continuous assessment will be applied.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exercise 12	20%	15	0.6	2, 3, 4, 5, 7
Exercises 1, 2, 3 and 4	45%	10	0.4	1, 2, 3, 4, 5, 6
Exercises 5, 6, 7 and 8	20%	35	1.4	1, 2, 3, 4, 5, 6
Exercises 9, 10 and 11	15%	15	0.6	1, 2, 3, 4, 5, 6

Bibliography

Daniels G: Blood group antibodies in haemolytic disease of the fetus and newborn; in: Hadley A, Soothill P (eds.): Alloimmune disorders of pregnancy. Anaemia, thrombocytopenia and neutropenia in the fetus and newborn. Cambridge, Cambridge university press, 2002.

Mollison PL, Engelfriet CP, Contreras M.: Haemolytic disease of the fetus and the newborn; in: Mollison PL, Engelfriet CP, Contreras M (eds): Blood transfusion in clinical medicine, ed. 11th ed., Oxford Blackwell Science, 2005.

Franklin IM: Prevention of rhesus haemolytic disease of the fetus and newborn. Lancet 2009; 373(9669):1082.

Moise KJ, Jr.: Management of rhesus alloimmunization in pregnancy. Obstet Gynecol 2008; 112(1):164-176.

Moise KJ: Fetal anemia due to non-Rhesus-D red-cell alloimmunization. Semin Fetal Neonatal Med 2008; 13(4):207-214.

Koelewijn JM, Vrijkotte TG, van der Schoot CE, Bonsel GJ, de HM: Effect of screening for red cell antibodies, other than anti-D, to detect hemolytic disease of the fetus and newborn: a population study in the Netherlands. Transfusion 2008; 48(5):941-952.

Dajak S, Stefanovic V, Capkun V: Severe hemolytic disease of fetus and newborn caused by red blood cell antibodies undetected at first-trimester screening (CME). Transfusion 2011; 51(7):1380-1388.

Koelewijn JM, de HM, Vrijkotte TG, Bonsel GJ, van der Schoot CE: One single dose of 200 microg of antenatal RhIG halves the risk of anti-D immunization and hemolytic disease of the fetus and newborn in the next pregnancy. Transfusion 2008; 48(8):1721-1729.

NICE: NICE issues guidance for RhD-negative women during pregnancy. 2002. Report No.: 2002/024 ed.

Joy SD, Rossi KQ, Krugh D, O'Shaughnessy RW: Management of pregnancies complicated by anti-E alloimmunization. Obstet Gynecol 2005; 105(1):24-28.

Hackney DN, Knudtson EJ, Rossi KQ, Krugh D, O'Shaughnessy RW: Management of pregnancies complicated by anti-c isoimmunization. Obstet Gynecol 2004; 103(1):24-30.

McKenna DS, Nagaraja HN, O'Shaughnessy R: Management of pregnancies complicated by anti-Kell isoimmunization. Obstet Gynecol 1999; 93(5 Pt 1):667-673.

Alcock GS, Liley H: Immunoglobulin infusion for isoimmune haemolytic jaundice in neonates. Cochrane Database Syst Rev 2002; (3):CD003313.

Mainie P: Is there a role for erythropoietin in neonatal medicine? Early Hum Dev 2008; 84(8):525-532.

Crowther C, Middleton P: Anti-D administration after childbirth for preventing Rhesus alloimmunisation. Cochrane Database Syst Rev 2000; (2):CD000021.

Engelfriet CP, Reesink HW, Judd WJ, Ulander VM, Kuosmanen M, Koskinen S, Rouger P, Morelati F, Tantalo V, Fujii T, de HM, van der Schoot CE, Overbeeke M, Koelewijn J, Bonsel G, Vrijkotte T, Zupanska B, Martin-Vega C, Parra LR, de SM, Contreras M, Panzer S, Ulm B, Mayr WR: Current status of immunoprophylaxis with anti-D immunoglobin. Vox Sang 2003; 85(4):328-337.

Kumpel BM: On the immunologic basis of Rh immune globulin (anti-D) prophylaxis. Transfusion 2006; 46(9):1652-1656.

Clausen FB, Christiansen M, Steffensen R, Jorgensen S, Nielsen C, Jakobsen MA, Madsen RD, Jensen K, Krog GR, Rieneck K, Sprogoe U, Homburg KM, Grunnet N, Dziegiel MH: Report of the first nationally implemented clinical routine screening for fetal RHD in D- pregnant women to ascertain the requirement for antenatal RhD prophylaxis. Transfusion 2012; 52(4):752-758.

West K, Anderson D, McAlister V et al. Alloimmune thrombocytopenia after organ transplantation. N Engl J Med 1999; 341:1504-1507.

Lubenow N, Eichler P, Albrecht D. et al. Very low platelet counts in post-transfusion purpura falsely diagnosed as Heparin-induced thrombocytopenia: report of four cases and review of literature. Thrombosis Research 2000; 100: 115-125.

Metcalfe P, Watkins NA, Ouwehand WH et al. Nomenclature of human platelet antigens. Vox Sanguinis 2003; 85: 240-245.

Welling KL, Taaning E, Lund BV, Rosenkvist J, Heslet L. Post-transfusion purpura (PPT) and disseminated intravascular coagulation (DIC). Eur J Haematol 2003; 71: 68-71.

Morishita K, Wakamoto S, Miyazaki T et al. Life-threatening adverse reaction followed by thrombocytopenia after passive transfusion of fresh frozen plasma containing anti-CD-36 (Nak) isoantibody. Transfusion 2005; 45:803-806.

Pavensky K, Webert KE, Goldman M. Consequences of transfusion platelet antibody: A case report and literature review. Transfusion 2008; 48:1981-1989.

Barba P, Pallarés P, Nogués N, Canals C, Gracia M, Vinyets I, Muñiz-Diaz E. Post-transfusion purpura caused by anti-HPA-3a antibodies that are only detectable using whole platelets in the platelet immunofluorescence test. Transfus Med 2009; 20: 200-202.

Lynce F, Yin F, Alcorn K, Malkosvka V. Post-transfusion purpura in an African-American man due to human platelet antigen-5b alloantibody: a case report. J of Case Med Reports 2012 6: 420.

Software

No specific software for this Module.